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State Wins Grant To Demonstrate CNG Buses At Logan Airport

GOVERNMENT DOCUMENTS
COLLECTION

JAN 26 1995

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STATE

Boston is one step closer to cleaner air. With help from \$205,000 recently awarded by the U.S. Department of Energy, the Massachusetts Port Authority (Massport) will purchase four original equipment buses that run on compressed natural gas (CNG) for the Logan Airport shuttle bus system. The grant was won in a joint effort led by the Massachusetts Division of Energy Resources (DOER).

"We are proud to have received the largest grant awarded nationwide in this competition," said Economic Affairs Secretary Gloria Cordes Larson. "Our efforts to support the use of clean-fuel transportation and to clean up the air in Boston will make Massachusetts a better place to live and work."

The purchase and operation of the four compressed natural gas buses will mark the start of a five year program to improve Boston's air quality through the monitored use of lower emission vehicles at Logan Airport. The program is a unique public/private partnership of DOER, Massport, Boston Gas and Alternative Vehicles Service Group, Inc. (AVSG), a developer of alternative fuel infrastructure. In support of the program, AVSG will build a fast-fill CNG fueling station at the airport, unique in that one side of the station will be accessible only to airport vehicles while the other side will be open to the public.

"DOER actively supports the use of alternative fuel transportation to reduce vehicle emissions," said Energy Commissioner Stephen Remen. "This project is particularly important because Logan Airport is in an area classified as a high-emissions zone, and our efforts here in Massachusetts will be a model for emissions reduction efforts in urban areas and airports nationwide."

The program will compare the relative cost, emission, operation and maintenance characteristics of the CNG buses with diesel and electric buses in Massport's fleet. Presently, Massport is considering the use of soy-based diesel fuel to power some of its vehicles.

CNG Buses/Massport: Continued on page 2.

NEW PROGRAM HELPS LOCAL GOVERNMENTS CUT ENERGY AND WATER COSTS

LOCAL

When it comes to energy and water efficiency, Massachusetts is practicing what it preaches.

Recognizing that a statewide energy efficiency effort must also include public buildings, DOER has unveiled the Energy Engineering Program (EEP). EEP services will help state and local governments cut rising energy and water costs at no up-front capital cost to facility operators.

Under EEP, engineers will be available to identify energy and water conservation improvements for new municipal and state construction projects, and to help managers of existing buildings identify improvements eligible for installation through third-party financing. EEP provides technical assistance to help municipal clients do several things: identify suitable facilities, generate competitive project proposals, evaluate proposals received and assist in project monitoring to ensure success.

New Program: Continued on page 6.

FROM COMMISSIONER REMEN:

In the past, environmental regulation, energy policy and economics have frequently found themselves at odds. Government, in command and control fashion, has set environmental rules and goals — and the energy industry has worked hard to meet them, facing the resultant economic challenges boldly and creatively, but not without difficulty.

Now, there is growing recognition that energy, the environment and economic growth are mutually dependent, and that change in any one area has resounding effects on the other two. The Weld/Cellucci Administration recognizes that economic strength depends on innovation and growth in many sectors, not the least of which is energy. As such, the state actively seeks opportunities for market based approaches to environmental regulation in the energy sector.

As we examine our biggest energy users and look for ways to reduce their environmental impact, we must not halt operations, but rather find ways to improve operations. We need to approach regulation constructively — and seize opportunities for economic development.

One key example is the use of emissions reduction credits, which are awarded to existing facilities that meet and exceed the requirements of the Clean Air Act. Facilities may either use these credits to compensate for emissions created by future expansion, or sell them to help other businesses meet emissions reduction requirements.

In other examples covered in this newsletter, the state works closely with industry and other partners to secure federal grants that support innovative environmental and energy efficiency efforts in many sectors, including manufacturing, alternative fuel transportation, and schools and hospitals.

Lastly, Massachusetts is a major stakeholder in utility market reform efforts, which have the potential not only to reduce rates for consumers, but also to provide a creative atmosphere that will accelerate the growth of energy efficient and environmentally compatible technologies. Recent history has shown that unleashing competitive forces in the energy market induces technology development. For example, since the enactment of the federal Public Utility Regulatory Policy Act of 1978, which provided the impetus for competition in the wholesale power market, efficiency in power generation technology has increased immensely, producing a significant reduction in the demand for fossil fuels by these technologies.

As electric industry restructuring moves forward, we must work to ensure that the new market is conducive to, and provides incentives for, continued technology innovation. Our efforts toward market based regulation will be rewarded with adequate supplies of affordable energy, a cleaner environment and continued economic development.

A CLEAN REFUELING NETWORK FOR THE NORTHEAST

REGION

Work is well underway on a refueling network for alternative fuel vehicles along major highways and byways of the

Northeast. The Northeast Clean Fuels Corridor Project, as it is called, is being conducted by the Coalition of Northeastern Governors (CONEG).

The project includes a detailed study of the refueling needs of fleet vehicles which travel along the northeast corridor, an area spanning Virginia to Maine. The study will examine both government and private heavy duty vehicle fleets to assess the potential market demand for a network of private alternative fuel refueling stations. In addition, CONEG will determine ways to make such a network attractive and cost effective, in order to encourage fleet operators to use the facilities, and to encourage investment in the development of a refueling infrastructure.

The overall project will identify and assess current travel patterns and key operating characteristics of fleets most likely to use an alternative fuel refueling network. An additional task of the study is to determine general attitudes among fleet operators toward alternative fuels. The project will recommend ways to make the fuels more accessible and less expensive, and to make refueling as easy and fast as for conventional gasoline and diesel vehicles.

The project is managed by the CONEG Policy Research Center, Inc. in close consultation with the project Technical Committee, staffed by representatives of CONEG, state and federal

Clean Refueling: Continued on page 6.

CNG BUSES/MASSPORT: *From page 1*

Logan Airport is the tenth busiest airport in the country with 24 million passengers each year. Approximately 88% of Logan's passengers begin or end their trips in Boston, which results in heavy dependence on the free shuttle within the airport complex. Currently, each bus in the fleet carries 30,000 to 35,000 passengers per month, travels some 60,000 to 70,000 miles per year and consumes 15,000 to 20,000 gallons of diesel fuel annually.

The use of alternative fuel vehicles at Logan Airport is expected to have a measurable effect on exhaust emissions, and the study will provide solid evidence of the cost-benefit of using such fuels. By demonstrating the use of the alternative fuel buses, the project will support the development of this new industry and lessen the state's dependence on imported fuels. In addition, the project will introduce thousands of passengers each year to alternative fuel vehicles.

The Logan Airport CNG Bus Demonstration is part of DOER's Alternative Fuel Vehicle Demonstration Program. The demonstration supports commitments outlined in The Massachusetts Energy Plan to diversify the state's transportation fuel mix, reduce air pollution, increase the use of alternative fuels and promote public transportation.

For more information, contact Jack Bevelacqua, DOER's Director of Programs, at (617) 727-4732, ext. 126.

EV DEMO UPDATE: HIGH MARKS FOR SUMMER, PVs ARE UP

Phase I of the Massachusetts Electric Vehicle Demonstration Project continues with high marks from EV users. All charging stations are in place at the Alewife and Braintree MBTA parking garages, and panels are in place for the photovoltaic (solar electric) arrays. The use of photovoltaics to replace grid energy consumed during charging of the electric cars makes these truly zero emission vehicles.

A DOER cumulative survey indicates that, since April of this year, participants ranked their vehicle performance at 8 out of a possible 10, showing a very high level of user satisfaction. This winter's cold temperatures, however, will provide additional information on vehicle performance and user satisfaction levels.

DOER also collects information on vehicle performance using a computer application and on-board data loggers. The constant monitoring of data will allow the state to evaluate electric vehicles as a viable option for commuting and for reducing vehicle emissions to meet the air quality standards established by the Clean Air Act.



Photovoltaics are installed at Braintree T Station.

The charging stations at MBTA parking garages and at all of the commuters' homes are fully operational. Energy used to recharge the vehicles at the MBTA stations is recorded daily by Commonwealth Electric Company.

The company also will record the energy generated by the photovoltaic arrays, when operational.

In a further development, the U.S. Advanced Research Project Agency (ARPA) has awarded funds for two additional EV Demo components under the Northeast Alternative Vehicle Consortium. DOER will receive \$45,000 to purchase and test an electric vehicle with an advanced heating, ventilating and air conditioning system. The vehicle is designed to minimize the use of energy during hot and cold seasonal driving. In another project, DOER will collect data on ten "next generation" hybrid electric vehicles now being built for testing in the Northeast.

The Massachusetts EV Demo Project, officially launched on April 22, 1994, is the nation's largest effort to test and evaluate the everyday use of electrically powered motor vehicles for commuting.

For more information, contact Jack Bevelacqua, at (617) 727-4732, ext. 126.

POWER NEEDS? THINK PVs

BUSINESS

Photovoltaic (PV) technology, in which radiant energy from the sun is converted to direct current electricity, is particularly useful for electric power generation in small or remote applications. In many circumstances, PV systems are the most cost-effective method of powering street lighting, call boxes, amenities at recreation facilities, and navigation and communication equipment. Even remote homes can be powered by PVs at a fraction of the cost of extending utility lines to the same location. Unfortunately, since many procurement officials and planners aren't familiar with the technology, good applications for PVs are often overlooked in Massachusetts.

To increase the use of PVs in the state, DOER and the Massachusetts Photovoltaics for Utilities (PV4U) Working Group held a workshop on cost-effective PV applications on September 22, 1994. Over fifty people, including state facility managers, public works engineers, electric utility managers, university researchers and government officials, came to learn about PV systems and applications.

Presenters included Jane Weissman, National Coordinator for PV4U, Ed Kern, President of Ascension Technology and Jerry Oppenheim, Director of the Pace University Law School Renewable Energy Technology Analysis Project. Workshop attendees learned how PV technology works, its advantages and limitations, and how to identify and evaluate their own applications.

DOER and PV4U are promoting the use of PVs and other renewable energy technologies as one way to increase the environmental compatibility of our energy sources and promote economic development. PV4U, chaired by Executive Office of Economic Affairs General Counsel David Tibbetts, is an organization of government, utilities, industry, environmental advocates and other stakeholders working to advance the commercialization of PVs.

For further information on photovoltaic technologies or the Massachusetts PV4U Working Group, or to obtain workshop materials, contact DOER's Nils Bolgen at (617) 727-4732, ext. 178.

Changing Directions In Energy Markets — Yet Again

By Ken Gordon, Chairman, Department of Public Utilities

STATE

Massachusetts, along with its sister New England states, has been on an energy roller coaster for more than twenty years now. While there have been notable achievements in some areas — environmental protection and the enhancement of energy efficiency come to mind — we still have critical problems to address in the energy cost and competitiveness arena.

The prospect of unlimited cheap energy ended in 1973. The steep cost rise forced energy policy to focus on security and increased efficiency — and propelled Massachusetts into a national leadership position on these issues. Finally, as a result of federal and state policies developed during the 1980's and 1990's, we are moving toward more competition in wholesale electricity and throughout the gas marketplace.

The critical remaining energy problem in the Commonwealth is cost competitiveness. The existing utility/regulatory planning and operating framework has still not achieved the level of efficiency needed to allow Massachusetts' industries to compete effectively in the national and global marketplace.

There are things regulation must do and other things it must not do as we turn our attentions to the competitiveness issue. First, the "don'ts."

Policymakers, utility customers and utilities cannot rely on the status quo, whether in industry or regulatory structures, to solve the cost problem. It won't do the job.

Neither should they assume that by adopting new structures, whether industry or regulatory, important social goals — environmental, efficiency, low income support — must be given up. This confuses goals with instruments.

The "do's": First, resolve to maintain important environmental and efficiency gains that have been achieved in ways that will allow the problem of cost competitiveness to be addressed more successfully. Tradable emission permits and other market based environmental regulations offer the possibility

of achieving a cleaner environment at lower cost. Closer to home, the Department of Public Utilities is simplifying its processes to allow utilities to respond to market changes and changing customer needs more quickly and effectively. Integrated Resource Management reform, already underway for certain

THE CHANGES TAKING PLACE IN ENERGY MARKETS ARE DEEP AND FUNDAMENTAL, AND THE REACTIONS OF UTILITY MANAGERMENTS MUST BE SIMILARLY FAR REACHING.

companies, will continue and be extended.

Secondly, it remains essential that we continue to move as expeditiously as possible to an open wholesale electric generation market. All participants in the marketplace must renew their efforts to create a regional transmission group that can receive the necessary federal approvals. The public utility commissions of New England will not allow parochial concerns to interfere with the achievement of this critical regional need. Massachusetts is in the forefront of these efforts.

The third and fourth legs of policy are intrastate. In August, the DPU issued an order on mergers and acquisitions, re-emphasizing that reorganization and restructuring of the energy industries is a course that must be explored, and, where it can yield benefits to customers, taken. The changes taking place in energy markets are deep and fundamental, and the reactions of utility managements must be similarly far reaching.

In September, the DPU followed with a Notice of Inquiry seeking comments on incentive regulation as an alternative to traditional cost-based, rate-of-return regulation for both electric and gas companies. Incentive regulation, properly designed, may well be

superior to traditional regulation in its incentives to operate efficiently, and at the same time may better be able to accommodate utilities' participation in the transition to a more competitive environment. The primary objective of any such alternative framework, of course, is to provide marketplace benefits to consumers through more efficient utility operations, stronger incentives for cost control, and therefore, enhanced opportunities for lower rates for everyone. Regulation has long been an imperfect substitute for competitive market forces and the benefits that result to consumers from the free play of those forces. The goal of our Notice of Inquiry is — paradoxically — to use regulation to liberate the very competitive forces for which it so long substituted.

Last, but surely not least, is the issue of customer choice. Electric service remains one of the few areas where customers cannot typically select their own service provider. That may be changing. In Great Britain, the Nordic countries and elsewhere, electricity markets are becoming more open to retail choice. California has opened a proceeding to develop a retail competition framework that is being closely followed all over the country. Retail customers, themselves under enormous pressure to contain costs in order to be competitive in their own markets, will try to reduce their energy costs by whatever means are available. This will surely include switching to new suppliers when possible.

The ability of customers to change suppliers is, in the end, the most critical element of the incentives that drive firms in a competitive market. While it is uncertain just how the pressures of competitive forces will unfold in electricity markets, they are affecting policy today. It is already clear that we must accept the challenge of assuring that all customers benefit, and that important reliability, environmental and social goals are preserved, as we gain the benefits of more direct access by customers to their energy suppliers.

If we are able to meet this challenge successfully, Massachusetts will be better positioned to move into the new economy of the next century.

REGION

New England electric utility companies, independent power producers, regulators and policy makers have been hard at work developing a New England regional transmission group (RTG). An RTG would facilitate increased competition in the wholesale electricity market and broadened transmission access, as mandated by the federal Energy Policy Act of 1992.

An RTG would establish regional rules for fair and equitable transmission access and prices. This should result in more robust competition in the wholesale electricity market and lower electric bills for consumers. Possible members of the RTG include investor-owned utilities, municipal utilities, non-utility generators and other users of the high voltage transmission system.

All RTG stakeholders met on September 22, 1994 to begin negotiations. Hosted by New England Electric System, the conference was co-sponsored by the New England Council of Public Utility Commissioners and the New England Governors' Conference Power Planning Committee.

At the conference, former Massachusetts DPU Commissioner Barbara Kates-Garnick presented a set of principles for an RTG on behalf of all six New England public utility commissions. The principles propose, first, that the RTG ensure fair pricing of and open access to transmission lines. Second, if the RTG requires access fees for transmission line use, then stranded investment and non-economic costs should be considered. Third, siting approval for new power plants and transmission lines should remain state regulated.

The public utility commissions also proposed the formation of an advisory group that includes environmentalists, consumer groups, industrial groups and some state agencies. The group would be entitled to all RTG communications and made aware of decisions in order to maintain public accountability.

The various stakeholders will negotiate over the next six months to develop an agreement that meets federal and regional guidelines and principles. The agreement will be presented to the six public utility commissions for review to ensure that recommendations

comply with state laws and policies. If accepted by the commissions, the agreement will be submitted to the Federal Energy Regulatory Commission for approval.

The development of New England's RTG was recommended in the July 1994 report of the Electric Utility Market Reform Task Force. The Task Force, co-chaired by Energy Commissioner Stephen Remen and DPU Chairman Ken Gordon, was called for in The Massachusetts Energy Plan of 1993.

For more information on Regional Transmission Groups, contact the DPU's Bob Harrold, (617) 727-9748.

DOER thanks former Commissioner Barbara Kates-Garnick for her contribution to this article, and wishes her well in her new career.

FUEL CELL COMMERCIALIZATION EFFORTS AT DOER

BUSINESS

Recent years have seen rapid advances in the development of fuel cell technology for both electric power generation and transportation. As part of a

broader dispersed generation initiative, DOER is working with the fuel cell industry and other stakeholders to promote fuel cells as a viable option for improving the efficiency and environmental compatibility of the state's electric power system. Fuel cells are now commercially available for on-site power generation, with transportation applications close behind.

Fuel cells produce electricity through a chemical process, like batteries, but rely on a continuous supply of fuel such as natural gas or hydrogen. Byproducts of the process include heat, water and a small amount of air emissions. The advantages of fuel cells include low emissions, high efficiency and high power quality. The modular nature of fuel cells and their quiet operation makes them suitable for dispersed generation applications.

For further information on DOER fuel cell and dispersed generation activities, please contact DOER's Renewables Program Manager, Nils Bolgen, at (617) 727-4732, ext. 178.

DPU OPENS DOCKET ON PERFORMANCE-BASED UTILITY REGULATION

STATE

The Massachusetts Department of Public Utilities (DPU) announced the opening of an inquiry into incentive regulation on September 20, 1994. The inquiry will investigate the effect of a performance-based incentive regulatory framework on electric and gas customers in Massachusetts.

Performance-based regulation uses financial incentives and market competition to achieve regulatory goals. The DPU's expectation is that "a well-designed incentive regulation scheme may allow a regulated utility to participate more effectively in a competitive marketplace and to achieve the ... goal of safe, reliable, and least-cost service to society more efficiently."

Performance-based regulation was recommended in the July 1994 report of the Electric Utility Market Reform Task Force, and is consistent with the Commonwealth's commitment to reducing utility bills while preserving important energy, economic and environmental goals.

The DPU welcomes comments from interested parties. Written comments must be submitted no later than November 1, 1994. One original and ten copies of all comments should be filed with: Mary Cottrell, Secretary, Department of Public Utilities, 100 Cambridge Street, 12th Floor, Boston, MA, 02202.

STUDY SHOWS GREEN TRAVEL VOUCHER BENEFITS

STATE

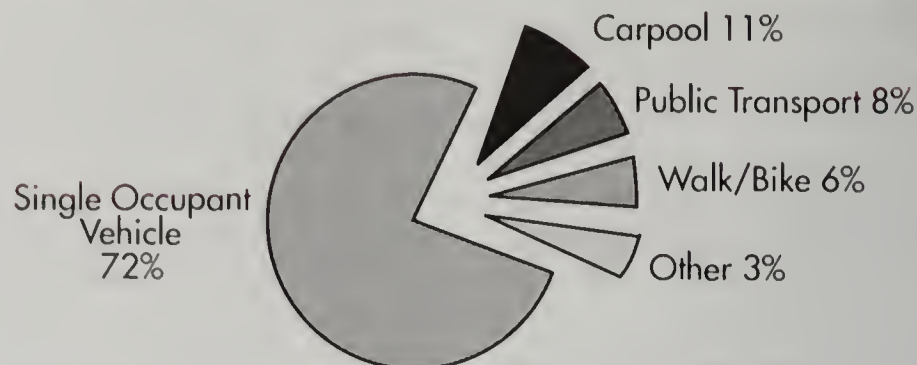
If it seems to you that the commute to work is a bigger headache than it was ten years ago, it's not your imagination.

While the Massachusetts workforce increased by some 300,000 between 1980 and 1990, the number of people driving to work alone — and contributing to air pollution and fuel use — increased by more than half a million.

To address the problem, DOER proposed in The Massachusetts Energy Plan the use of Green Travel Vouchers. This unique program would apply to employers currently paying to provide their employees with parking. The Green Travel Vouchers would provide an economic incentive for employees with free parking benefits to choose more efficient and environmentally friendly modes of transportation for commuting. Under the program, employees would trade their parking benefits either for cash or for a public transportation voucher.

The impact that a Green Travel Voucher program would have on the state is the subject of a recent study conducted by DOER's State Annual Forecast of Energy Resources (SAFER) Project. SAFER uses a computer based model to predict the outcomes of the state's energy policies. SAFER estimates that if only 18% of eligible employees were to participate in a Green Travel Voucher program, 631 million gallons of gasoline could be saved by the year 2000. As a result, automobiles would emit 2,059 fewer tons of VOCs and 807 fewer tons

How Mass. Residents Get to Work



Source: 1990 Census - Massachusetts

of nitrogen oxides. The program would also reduce the state's dependence on imported oil.

Since commuters will receive cash through the program and spend less money on

gasoline, a Green Travel Voucher program also may have a positive impact on people's wallets. SAFER predicts the resulting increase in disposable income would be \$328 million over a two-year period. According to SAFER, this additional income could indirectly result in nearly 1,200 new jobs.

As a next step, DOER will develop plans for a Green Travel Voucher pilot program to include several Massachusetts businesses. The information obtained from the pilot program will aid in the design of a Green Travel Voucher program for Massachusetts.

For more information on the Green Travel Voucher program, contact DOER's SAFER Project Director John Murphy at (617) 727-4732, ext. 142.

IF ONLY 18% OF ELIGIBLE EMPLOYEES WERE TO PARTICIPATE IN A GREEN TRAVEL VOUCHER PROGRAM, 631 MILLION GALLONS OF GASOLINE COULD BE SAVED BY THE YEAR 2000.

NEW PROGRAM: From page 1

Examples of improvements include: energy management systems and controls, lighting technologies, heating and air conditioning system upgrades and conversions, swimming pool covers, high efficiency motors and pumps, heat recovery systems, cogeneration systems and building envelope upgrades.

EEP services will be provided in two forms:

Review of New Facility Design

EEP engineers will review building design plans to ensure that new construction meets the energy requirements of the state building code. Design services will also help municipalities take advantage of new technologies and funding packages to increase efficiency beyond current code requirements.

Third-Party Financing

Program experts will advise municipalities on how to develop innovative financing packages using private sources. Third-party investors will finance the purchase, design, installation and maintenance of energy and water efficiency improvements at no up-front cost to facility operators. Investors will be paid a percentage of the actual cost savings that result from the installed improvements.

EEP falls under DOER's larger Public Buildings Initiative to reduce energy consumption costs in the state and municipal building sector. The program is intended to save taxpayers money. It does so by helping cities and towns with effective building management teams apply their expertise to energy and water efficiency projects.

For more information on EEP, contact Teresa Civic, Public Buildings Program Manager, (617) 727-4732, ext. 137.

CLEAN REFUELING: From page 2

energy and transportation agencies, Bay State Gas Co., Mobil Corp., Brooklyn Union Gas and fleet operation and administration companies. State energy offices, including the Massachusetts Division of Energy Resources, and regional offices of the U.S. Department of Energy and the General Services Administration, will play a key role in government fleet information and tracking.

The Clean Fuels Corridor project is designed to help meet 1992 Energy Policy Act and Clean Air Act requirements for alternative transportation fuel use. The project is scheduled to be completed by the end of 1995.

For more information, contact DOER's Senior Policy Analyst Irving Sacks at (617) 727-4732, ext. 132.

U.S. DOE HEARS FROM REGION ON NATIONAL ENERGY POLICY

FEDERAL

To solicit regional input in the development of the President's 1995 National Energy Policy Plan, the U.S. Department of Energy held a public meeting at the Massachusetts Institute of Technology in Cambridge on September 12. Hosted by U.S. Deputy Secretary of Energy Bill White, this was one of eight meetings scheduled nationwide.

In both town meeting format and roundtable discussion, regional industry leaders and policy makers, including Commissioner of Energy Resources Stephen Remen, discussed the relationship of energy policy to the environment and to industrial competitiveness. Massachusetts, long recognized as an established leader in energy policy, was an ideal location to address these topics.

Sustainable development — meeting the needs of the present without compromising the ability of future generations to meet their own needs — will provide the framework for the National Energy Policy Plan. In developing its policy, the Administration will also evaluate the interdependence of economic growth and environmental progress.

Topics to be covered at other regional hearings include energy and sustainable rural and urban economies, nuclear power, domestic energy production and international trade issues. Discussions will also cover electric power competition, science and technology, transportation, and the future of coal, natural gas, oil and petroleum in the domestic economy.

The U.S. DOE welcomes written comments on any energy-related subject to assist in the formulation of the National Energy Policy Plan.

For more information, contact Duane Day, DOE Public Affairs Officer, at (617) 565-9705.

**ENERGY FACT:
MASSACHUSETTS USES
AN AVERAGE OF 15.3
MILLION GALLONS OF
OIL EVERY DAY.**

\$841,359 AWARDED TO SCHOOLS AND HOSPITALS UNDER ICP — NEW CYCLE OPENS

STATE

Fourteen schools and three hospitals in Massachusetts were recently awarded a total of \$841,359 in matching grants for energy conservation measures under Cycle 16 of the federally-funded Institutional Conservation Program (ICP). Energy Conservation Measure (ECM) grants were awarded by the U.S. Department of Energy (DOE) on August 15, 1994 based on recommendations made by the Division of Energy Resources. Under the grants, DOE will fund 50 - 90% of the cost of energy conservation measures. The measures will increase the energy efficiency and decrease the annual operating costs of 28 buildings in Massachusetts.

Institutional Conservation Program grants to public and private non-profit schools and

hospitals fund the purchase and installation of cost-effective energy efficiency measures such as new lighting systems, heating and ventilation improvements, computerized energy controls and insulation. Grants awarded in Cycle 16 ranged from \$8,850 to \$90,245.

Cycle 17 of the Institutional Conservation Program opens in October. DOER will hold two informational workshops for interested parties, one in West Springfield on November 15 and the other in Boston on November 18, 1994. Application materials will be available at the workshops. They also may be obtained by calling DOER.

To find out more, call DOER's ICP Program Manager Laura Merrill, (617) 727-4732, ext. 146.

NICE³ INDUSTRIAL EFFICIENCY SOLICITATION DUE OUT NOVEMBER 1

FEDERAL

Innovative technology demonstration proposals are being sought from companies interested in becoming state/industry partners for the National Industrial Competitiveness through Energy, Environment and Economics (NICE³) grant program operated by the U.S. DOE and EPA. State partners include the Division of Energy Resources, the Office of Technical Assistance of the Executive Office of Environmental Affairs, the Executive Office of Economic Affairs and the Industrial Services Program.

Up to \$5.5 million in federal seed money will be available for projects that will advance competitiveness through industrial energy efficiency, waste reduction and pollution

prevention. The formal solicitation period is expected to open November 1, 1994.

The Commonwealth of Massachusetts and the Erving Paper Company in Erving, MA recently won the state's first NICE³ grant. With its \$425,000 cost-sharing grant award, Erving Paper Company will undertake a unique \$2.7 million project to increase the use of post-consumer waste paper by 35-40% in its manufacturing process, and significantly reduce energy consumption, waste generation, toxic chemical use and air emissions.

If your company has a project to propose, please call DOER at (617) 727-4732 to request a NICE³ program information package. Proposals will be accepted by the state only through Friday, December 2, 1994.

U. S. DOE SEEKING AWARD NOMINATIONS

The U.S. Department of Energy (DOE) is seeking applications for its 1995 National Awards Program for Energy Efficiency and Renewable Energy. Any individual or non-federal organization that has implemented an outstanding energy efficiency or renewable resource technology measure since January 1, 1990 may apply. Projects must have been operational for one year to allow for documentation of the projected energy savings or the

program results. Applications must be submitted to the state energy offices, who will review and submit them to DOE. Applications are due to the Division of Energy Resources by March 15, 1995.

For more information, contact Rosemary Mape, DOE, at (717)-783-9981. For an application, contact DOER's Public Information Officer, Susan Gedutis, at 617-727-4732, ext. 134.

CALENDAR/FALL 1994

OCTOBER: ENERGY AWARENESS MONTH

31 *Application Deadline for 1995 Green Lights Partner and Ally of the Year Awards.* EPA's Green Lights Program promotes the use of energy efficient lighting in private, non-profit and government facilities. Call the Green Lights Hotline, (202) 775-6650.

NOVEMBER

1-2 *National Electricity Forum, Washington, DC.* Sponsored by DOE and the National Association of Regulatory Utility Commissioners. Contact Jim Fremont, (202) 586-5727.

2-3 *Fundamentals of Energy Management, Washington, DC.* Sponsored by DOE. Contact Michael Farr, Association of Energy Engineers, (404) 447-6415.

11-12 *11th Annual Quality Building Conference, Springfield.* Sponsored by the New England Sustainable Energy Association. Call (413) 774-6051.

11 *Conference on Canadian-Northeast Energy Trade, Boston.* Sponsored by the New England-Canada Business Council, New England Governors' Conference, Inc. Call Kathy Giroux, (508) 458-9668.

15 *New England Energy Task Force Meeting, Boston.* At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

15 *Institutional Conservation Program Grant Workshop, West Springfield.* (See article, p. 7.)

18 *Institutional Conservation Program Grant Workshop, Boston.* (See above.)

18-19 *National Innovation Workshop, Louisville, KY.* Sponsored by DOE. Contact Kenneth L. Blanford, (502) 852-7854.

DECEMBER

20 *New England Energy Task Force Meeting, Boston.* At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

CORRECTION

In the last issue, we mistakenly printed the phone number for the Massachusetts Strategic Envirotechnology Partnership (STEP) as 727-3200. The correct contact is Todd Fernandes, at 727-3206.

The *Energy Report* is published by The Massachusetts Division of Energy Resources.

Suggestions, calendar submissions, questions and input are invited. Send to Editor, *Energy Report*, The Massachusetts Division of Energy Resources, 100 Cambridge Street, Room 1500, Boston, MA, 02202. DOER staff members can be contacted at (617) 727-4732. *Energy Report* is printed on recycled paper using soy ink.

COMMONWEALTH OF MASSACHUSETTS DIVISION OF ENERGY RESOURCES

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Boston, MA, 02202.

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GOVERNMENT DOCUMENTS
COLLECTION

MAY 15 1995

New Renewable Energy Facilities On Line In Massachusetts

STATE

While some folks in Massachusetts complain about the weather, others put the elements to good use. In three new renewable energy developments, researchers and businesses across the state are using the state's wind, water and sun to generate electricity. Two facilities in Holyoke and one on Peddocks Island, in Boston Harbor, recently began operation, adding to the growing list of renewable energy projects in the state. These projects contribute valuable information on the siting, construction and operation of renewable energy technologies.

■ November 10, 1994 marked the formal dedication of the largest existing wind turbine installation in New England. (Photo, right.) The 250 kW wind turbine, perched on an 80-foot tower on Mt. Tom in Holyoke, was installed by the University of Massachusetts (UMass)-Amherst Renewable Energy Research Laboratory. The project is an important demonstration of the practicality of wind power in New England. It will be a useful research and education tool for the nationally-renowned UMass Wind Energy Program. The wind turbine powers the Mt. Tom Ski Area, and any surplus power is sold to the Holyoke Gas and Electric Department. UMass purchased and rebuilt the wind turbine; DOER provided funding for installation.

■ Also in Holyoke, the City recently completed the rehabilitation of a 790 kW hydroelectric generating



Mt. Tom wind turbine in Holyoke.

station. The generating station, built in 1931, is located in a former mill building and uses water from Holyoke's unique 19th century canal system. DOER, the City of Holyoke and the project contractor, O'Connell Engineering and Financial,

funded the rehabilitation. Initially, the contractor will operate the generating station and sell its power to the Holyoke Gas and Electric Department. After 10 years, Holyoke Gas and Electric will assume direct responsibility for the station's operation. (See diagram, p. 3.)

■ In October, a DOER-funded 3.2 kW photovoltaic power station was completed on Peddocks Island in Boston Harbor. (Photo, left.) Peddocks Island has no electric power connection to the mainland, so the installation of a modular mechanism to produce electricity is especially appropriate. The photovoltaic power station, with battery storage and diesel generator backup, uses the sun to power the lighting, communications and safety equipment in five buildings at Fort Andrews on the island. The site is a former World War I military installation, now managed by the Metropolitan District Commission as part of the Boston Harbor Islands State Park. The photovoltaic system helps make Peddocks Island a more attractive destination for the 100,000 visitors that come to the Boston Harbor Islands State Park annually.



Photovoltaic arrays on Peddocks Island, in Boston Harbor.

Renewable Resources: Continued on page 3.

FROM COMMISSIONER REMEN:

As travelers fly into Logan Airport, they will see photovoltaic panels on Peddocks Island. Luggage tugs powered by compressed natural gas will transport their bags to the baggage claim. Travelers may then board airport shuttle buses powered by electricity, natural gas or soy-based diesel. Some travelers will take public transit to an MBTA station, where their electric vehicles, recharged by solar panels, await them. They will drive home to an energy efficient home, perhaps a home whose electricity is generated by wind power, hydroelectricity or solar power.

This is not a vision. In Massachusetts, this is a reality. It is the result of a vision of a sustainable future, where energy supplies are adequate, the environment is clean and the economy is growing. A prime example of sustainability in the Commonwealth is the town of Princeton, where 40% of the power supply comes from renewable resources from numerous suppliers. For Massachusetts, sustainability is the central theme that shapes our State Energy Plan. To underscore this, and to report on the state's progress in this area, we have chosen to dedicate this issue of the Energy Report to sustainability.

The pursuit of sustainable economic development is not only good economic policy but also good environmental policy. The development of technologies for renewable energy, alternative fuel vehicles and energy efficiency measures helps provide jobs and improve the competitive stature of our industries.

To promote sustainable development, DOER works with the energy efficiency, renewable energy and alternative vehicle/fuels industries to shape state policy that supports their growth. DOER supports utility procurement of sustainable resources. DOER is working with the public and private sectors to develop technical and financial assistance for new environmental and energy technologies, such as fuel cells. Through efforts like the Electric Vehicle Demonstration and the recent Tunnel Safety Study, DOER is working with many partners to pave the way for the full implementation and widespread acceptance of sustainable transportation technologies in Massachusetts.

To recognize and promote innovative, sustainable energy efforts throughout the Commonwealth, DOER created the Governor's Energy Award program. In this issue, we are proud to announce the winners of the 1994 Award. We hope that the winning projects will inspire and assist others who want to implement their own sustainable development projects.

Exploration into energy efficient, renewable and alternative energy technologies must continue with the momentum established by such forward-looking projects as those covered in this newsletter. By supporting innovation in these areas, we can attract new businesses and create jobs in the Commonwealth. Look around you: you will see that, through our combined efforts, we are already on the way to becoming the most energy efficient state in the nation.

MUNICIPAL EFFICIENCY TASK FORCE REPORT AVAILABLE

As part of the Commonwealth's larger effort to support increased energy efficiency in all sectors, DOER and Massachusetts' municipal utilities have issued *Resources for Energy Efficiency*, a series of recommendations to increase energy efficiency in municipal utility service territories.

Resources for Energy Efficiency is the final product of the Efficiency Task Force for Municipal Utilities, which began its work in November of 1993. DOER convened the Task Force to promote energy efficiency as a tool to increase competitiveness and economic growth among the state's municipal utilities, an action recommended by the 1993 Massachusetts Energy Plan. The Task Force report identifies practical ways to improve energy efficiency for municipal utility customers.

To obtain a copy of *Resources for Energy Efficiency*, call DOER at (617) 727-4732.

REFORMULATED GAS AT PUMPS

STATE

A major Environmental Protection Agency initiative to reduce air pollution hit the streets on January 1, 1995. In Massachusetts and other designated areas throughout the country, conventional gasoline was replaced at retail pumps with a new, cleaner gasoline known as reformulated gasoline (RFG).

RFG is mandated in the country's nine most smog-prone metropolitan areas by the Clean Air Act Amendments of 1990, and optional in other areas. Massachusetts elected to join the program, in part, because RFG is one of the least expensive ways to reduce volatile organic compound (VOC) emissions. The state must cut VOCs 15% by 1996 and 24% by 1999, relative to 1990 levels.

Phase I of the RFG program requires RFG to achieve a 15-17% reduction in ozone-forming VOCs and toxic vehicle emissions. Phase II, starting January 1, 2000, will require a 25-29% reduction in VOC emissions, and a 5-7% nitrogen oxide reduction.

The program will achieve emission reduction goals through a gradual change in the formulation of the gasoline. From 1995 to 1997, RFG will contain a maximum benzene content of 1% by volume, no heavy metals or lead additives and a minimum oxygen content of 2% by weight. In addition, a lower volatility, or "Reid Vapor Pressure," will be required in summer to reduce ozone-forming VOCs. The oxygen content in RFG will be increased through the use of ether (MTBE, ETBE or TAME) or alcohol (ethanol). On January 1, 1998 and January 1, 2000, the Clean Air Act requires refiners to further reduce the amount of sulfur, olefin and other toxic air pollutants in the formulation.

The Massachusetts Petroleum Council and oil industry experts indicate that RFG supplies to Massachusetts should be adequate, barring unforeseen circumstances. Customers may see a slight rise in price at the pump, since reformulated gasoline costs more to manufacture and distribute. However, it is difficult to predict actual retail prices, as these are determined by a variety of market conditions.

For more information, contact Joanne McBrien, DOER's Senior Policy Analyst, at (617) 727-4732, ext. 145.

LEGISLATIVE UPDATE

STATE

The Division of Energy Resources has filed three bills for consideration in the 1995 Legislative Session. The following is a brief description of the bills.

■ **An Act to Promote the Use of Natural Gas Vehicles:** This bill would deregulate the sale of compressed natural gas when sold for use as a motor vehicle fuel.

■ **An Act to Encourage Residential Energy Conservation:** This bill would exempt from the definition of "taxable income" any income, rebate or subsidy provided by a utility company to a residential customer who engages in residential energy conservation.

■ **An Act to Promote the Use of Environmentally Sound Energy Technologies:** This bill would modify the manner in which existing state energy bond funds are used for energy conservation in public facilities. The bill is designed to promote energy education and awareness, and will more effectively encourage the use of new energy technologies in public buildings.

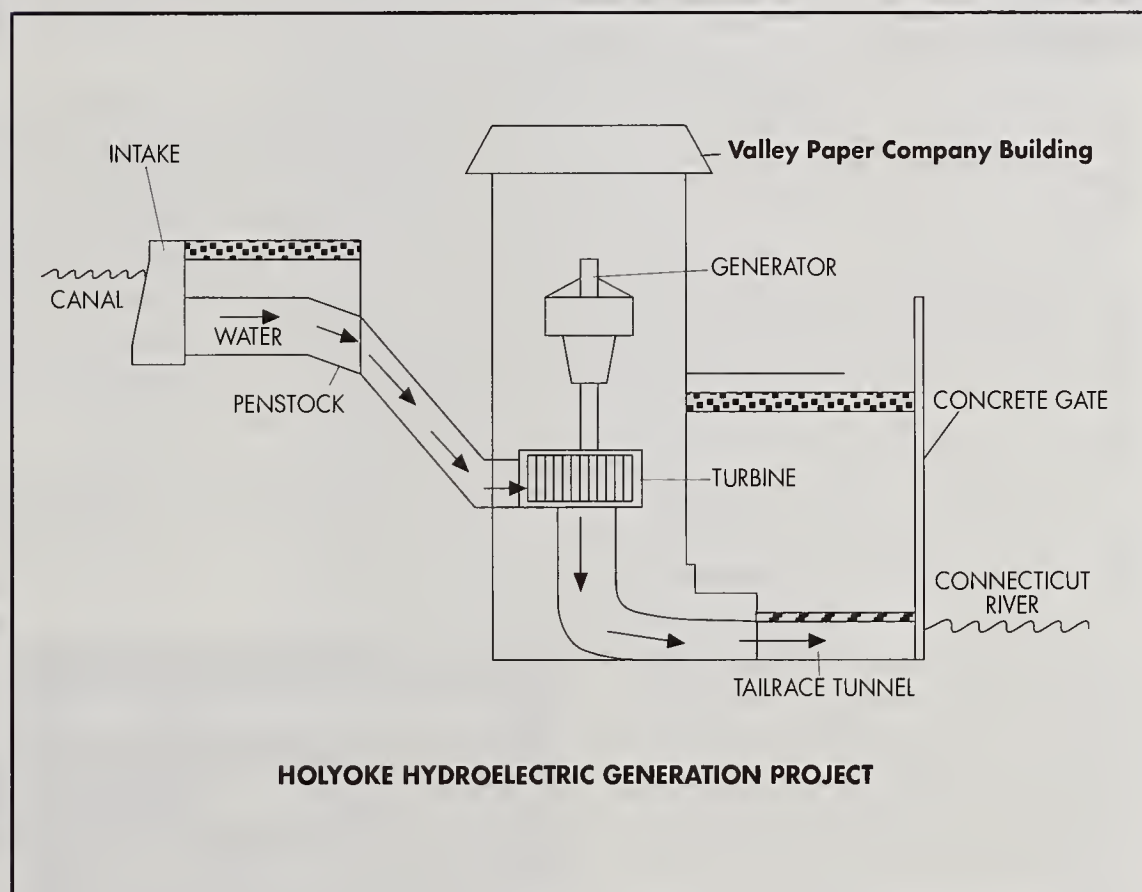
For further information, contact Christine Constatas Erickson, DOER's Deputy General Counsel, at (617) 727-4732, ext. 166.

RENEWABLE ENERGY FACILITIES: From page 1

The Massachusetts Energy Plan recognizes that greater use of renewable energy technologies will bring substantial environmental and economic benefits to the Commonwealth. For this reason, DOER works with utilities, industry, environmental and consumer advocates and other government

agencies to promote renewable energy development.

For more information on renewable energy in Massachusetts, contact Nils Bolgen, DOER's Renewables Program Manager, at (617) 727-4732, ext. 178.



CNG VEHICLES SAFE FOR TRAVEL THROUGH TUNNELS

STATE

Drivers may notice over the next few months a blue-and-white diamond-shaped decal on some vehicles. These decals identify vehicles that run on compressed natural gas (CNG). The decals are part of the safety measures recently recommended by city and state decision makers, following a study of the safety of compressed natural gas vehicles in Boston's tunnels and underpasses. The study is part of a larger effort to remove some of the regulatory barriers that discourage fleet owners from converting some of their cars, vans and buses to cleaner-burning fuels like natural gas.

The Boston Fire Department requested the study to evaluate the safety of CNG relative to other, traditional vehicle fuels. All of Boston's tunnels and underpasses were analyzed and measured for air flow. The results showed that they are all adequately ventilated for safe dispersion of a compressed natural gas vapor cloud. In fact, given the air flow in Boston's

tunnels and underpasses, the study showed that a CNG fuel accident would actually pose a lesser fire and explosion hazard and produce a smaller flammable zone than would an equivalent gasoline spill.

The study was conducted by the Center for Firesafety Studies at Worcester Polytechnic Institute and sponsored by the Massachusetts Highway Department. It was endorsed by the Tunnel Safety Steering Committee, which is comprised of decision makers from various city and state agencies, including the Boston Fire Department. DOER chairs the Steering Committee.

The Steering Committee has recommended that CNG vehicles be allowed to travel through tunnels and underpasses in the City of Boston. However, the Committee stipulates that the maximum fuel capacity of CNG-fueled vehicles must be consistent with safe practice and national standards. The Registry of Motor Vehicles is now incorporating fuel tank and

fuel line criteria into inspection and maintenance procedures for all CNG-fueled vehicles. Restrictions on tanker trucks and on the transportation of other hazardous cargo through tunnels and underpasses remain in effect.

The Boston Fire Department will request that the Board of Fire Prevention Regulations develop and adopt uniform state regulations for CNG refueling station design, installation, operation and inspection.

Members of the Steering Committee include: the Boston Fire Department, the Massachusetts Turnpike Authority's Tunnel Division, the Executive Office of Transportation and Construction, the Central Artery/Tunnel Project, the State Fire Marshal, the Executive Office of Environmental Affairs and DOER.

For more information, contact DOER's Senior Policy Analyst Irving Sacks, at (617) 727-4732, ext. 132.

Renewable Energy: Ready for Business

By Howard Ris, Executive Director, and Alan Noguee, Senior Energy Analyst
Union of Concerned Scientists

STATE

Massachusetts is generally not considered an energy production mecca. But consider:

- wind energy in the Bay State has the technical potential — subject to siting constraints — to supply up to half of our electricity;
- solar photovoltaics (PV) can be more economical in the northeast than in Florida, because our electricity use — driven by commercial air conditioning — peaks when the sun shines brightest; and
- new technologies, like fuel cells, can make electricity from gasified biomass (wood or other plant-derived matter) or natural gas with very low emissions.

The benefits of renewable energy have always attracted strong public support. Massachusetts' utility surveys show that their customers want renewables, and most are willing to pay somewhat higher rates for them. But, with prices down as much as 90 percent from only a decade ago, renewables can now start contributing to power supplies with almost no rate impact.

The Department of Public Utilities recently approved Massachusetts' contract to purchase about one percent of its generation with a proposed "wind farm" in Maine and small landfill gas-burning plants. These purchases will cost even less than new natural gas and coal-fired plants. Total cost: an extra 36 cents per year for typical residential customers.

More expensive technologies, like PV and fuel cells, can also be cost-effective when sited at high-value locations that would otherwise require costly upgrades to transmission or distribution systems. Such "distributed generation" can increase power quality and reliability.

The Massachusetts Energy Plan encourages all Massachusetts utilities to issue Green Requests for Proposals. If each utility in the northeast acquired one percent of its generation from renewables and fuel cells, the siting, installation and operating experience — along with mass production economics — could drive down costs to make these options

fully competitive and widely available. The total rate impact should be only around one percent or less, phased in over a number of years.

It will probably take at least five to 10 years of sustained orderly development to fully commercialize renewables in the northeast. Good resource sites must be identified and verified. Land-use and other environmental issues need to be addressed. Sustained operating performance in the northeast climate must be demonstrated. High value sites for distributed generation must be identified. New manufacturing facilities must be built. Installation and maintenance forces must be developed. Utility grid integration issues must be addressed.

**RENEWABLES ARE
READY FOR
BUSINESS, IF WE
ARE READY TO
DEVELOP THEM.**

That is why we have to start now. We may have a power glut today, but by the time renewables can be fully commercialized, we are likely to need all the power we can get. New England utilities currently estimate we will need about 1,000 megawatts (MW) of new power supplies by the end of the next ten years. The recent Great Whale project deferral creates new uncertainty about whether we can rely on Hydro Quebec for 1,500 MW, when the current contracts expire after the year 2000.

Then, consider our aging nuclear plants. New England utilities are counting on nuclear units operating through their 40-year licenses. But the longest-lived nuclear plant to date was Yankee Rowe which closed after 32 years. Nine U.S. nuclear plants retired before that age. If all eight remaining New England

utilities last 32 years, we would need to replace over 3,200 MW during the next six to 10 years.

Finally, renewables can make it a lot easier to meet emission requirements in the years ahead — especially if economies of scale are realized, making renewables fully competitive with scrubbers and other pollution controls. They offer the most cost-effective way to protect public health and the environment, goals that are widely supported by Massachusetts citizens. Renewables not only cut smog-producing emissions, but also reduce:

- CO₂ emissions at 1990 levels to reduce the risk of global climate change;
- discharges of toxic metals, such as lead and mercury;
- damage to human health and the environment from small particulates, SO₂ and NO_x; and
- impacts on dwindling fish stocks from hundreds of millions of larvae being trapped in cooling water systems.

By replacing some of the aging coal and oil plants that represent a third of our generating capacity, renewables will reduce pressure on other industries to make additional emission cuts. Developing renewables here also retains money in the state's economy, helps stabilize energy prices, and could attract new energy businesses, in the same way that utility energy efficiency programs helped create thousands of jobs in Massachusetts. In California, renewables development drove down costs and created an industry that now exports worldwide.

To accelerate the development of renewable resources in New England, the Union of Concerned Scientists and the Conservation Law Foundation have launched a joint project to work with utilities, state agencies, legislators and other interest groups to overcome the barriers to sustainable energy development in New England. Renewables are ready for business, if we are ready to develop them.

Facts and opinions expressed in guest editorials are those of the authors and not necessarily those of DOER.

DISPERSED GENERATION

BUSINESS

The Massachusetts power industry is exploring a new twist in the law of energy supply and demand: dispersed generation. Dispersed generation is a relatively new term that refers to locating smaller, modular power generators, like fuel cells, in areas of high energy demand. It is especially applicable in areas where a growing demand for energy would otherwise require costly upgrades to the transmission and distribution system. Dispersed generation could reduce the costs of long-distance transmission and distribution, make utilities more efficient and competitive, and ultimately reduce rates for utility customers.

As the likelihood of electric utility market competition increases, dispersed generation may become more attractive to utilities as they strive to contain costs, increase reliability and boost quality of service. Further, dispersed generation can provide the ideal opportunity to use a wide variety of state-of-the-art renewable technologies that are typically cleaner and more energy efficient. This includes power generation from photovoltaic arrays, fuel cells, wind and a wide variety of other renewable technologies. (See also Collaborative Efforts Promote Fuel Cells, Photovoltaics and Windpower, on this page.)

DOER, Massachusetts Electric Co. and others recently entered into a settlement agreement to conduct a pilot study to determine cost-effective applications of dispersed generation technologies. The pilot study is targeted to start in September 1995, pending DPU approval.

For more information, contact DOER's Renewables Program Manager, Nils Bolgen, at (617) 727-4732 ext. 178.

COLLABORATIVE EFFORTS PROMOTE FUEL CELLS, PHOTOVOLTAICS AND WINDPOWER

Massachusetts state agencies, environmental organizations and industry are working together to promote and support the development of energy technologies that benefit both the environment and the economy. These technologies are ideal candidates for dispersed generation applications. A few of the working groups are highlighted here.

Massachusetts Fuel Cell Working Group: DOER has formed this group to support the commercialization of fuel cell technology for electric power generation. The group, consisting of representatives from environmental organizations, DOER and other state agencies, held its first meeting in November, 1994.

The working group has developed a multi-track effort to stimulate the use of fuel cells in Massachusetts and to attract fuel cell industry to the state. Policy initiatives are underway to encourage utilities and industries to take advantage of the benefits of fuel cells, which include high power quality, low air emissions and quiet operation. The group is also working to identify prime fuel cell installation sites based on site characteristics and cost-benefit analyses. Finally, to jump start the commercialization process, the group hopes to take advantage of a federal subsidy for several fuel cell installations in Massachusetts. DOER invites representatives from the fuel cell industry and electric and gas utilities to join the Massachusetts Fuel Cell Working Group.

PV for Utilities: Since 1992, the Massachusetts PV for Utilities State Working Group has promoted photovoltaic (PV) technology. The working group supports education, demonstration and other initiatives, and is one of ten such groups in the United States (see Energy Report,

DOER COMMENTS ON DPU'S INCENTIVE REGULATION INQUIRY

BUSINESS

Change looms on the horizon for utility rate regulation, a change that is supported by state energy policy makers. In recent comments submitted to the Department of Public Utilities (DPU), the Division of Energy Resources endorsed the transition, in Massachusetts, from traditional cost-of-service, rate-of-return regulation to incentive regulation (sometimes referred to as performance-based regulation or "PBR"). The comments were filed in response to the DPU's investigation into the effects of incentive regulation on electric and gas utility customers in the state.

Under the current regulatory framework, utilities can pass on to customers most incurred costs. If a utility reduces its cost, it eventually would be required by existing regulation to pass the full savings on to rate payers in the form of lower rates. As a result, there is little or no incentive for utilities to become more efficient and cut costs. To provide such incentive, DOER and many other parties called for a system of incentive ratemaking for utilities.

DOER recommends that reasonable utility price formulas be developed that explicitly account for market prices, energy price inflation and other factors. Utilities could then charge customers based on these prices, and could keep a portion of any additional cost savings they achieve for their shareholders. The remainder of the cost savings would be returned to rate payers. This sharing arrangement would ensure that both consumers and shareholders benefit from cost savings.

DOER also suggests that rate incentives be compatible with other regulatory initiatives to open access and increase customer choice among energy suppliers. DOER specifically recommends that incentive ratemaking be applied on an "unbundled" basis, meaning that prices for potentially competitive services provided by utilities, namely energy supply, be determined and charged separately from transmission and distribution services. In a competitive market, this would allow customers to choose between the utility or any alternative supplier offering the best energy supply deal.

DOER supports incentive regulation as a means to help utilities reduce cost and improve performance, increase productivity and competition, stimulate the economy and create jobs. The DPU is expected to make a decision early in 1995.

For more information contact Ken Blonder, DOER's Gas and Electric Analyst, (617) 727-4732, ext. 148.

Fall, 1994). Massachusetts is fortunate to have especially strong representation in the group from the local private PV industry.

Northeast Utilities Western Massachusetts Wind Evaluation Project: Under this effort, DOER, other state agencies and consumer and environmental advocates are helping Northeast Utilities to identify and assess potential windpower development sites in western Massachusetts. Sites will be evaluated for feasibility and environmental compatibility. DOER recently submitted a funding proposal for the project to the National Renewable Energy Laboratory in conjunction with Northeast Utilities.

For more information, contact DOER's Renewables Program Manager, Nils Bolgen, at (617) 727-4732, ext. 178.

ONE PERSON'S TRASH IS ANOTHER'S... ENERGY

STATE

Use landfill gas to make electricity? What seemed to be a far-fetched idea twenty-five years ago is now officially recognized as a viable energy option in Massachusetts. A recent voluntary agreement between DOER, the Massachusetts Department of Environmental Protection and the U.S. Environmental Protection Agency (EPA), under the EPA's Landfill Methane Outreach Program, encourages the development of landfill gas recovery projects as a way to diversify our energy mix and reduce greenhouse gas emissions.

All three parties recognize that widespread use of landfill gas as an energy resource will reduce emissions of methane, a potent greenhouse gas. As organic materials in a solid waste landfill decompose without oxygen, a combustible gas forms. The gas, composed of almost equal parts of carbon dioxide and methane, can be dangerous. One way this danger can be averted is by capturing

the gas to generate power. Landfill gas recovery can be a profitable way to reduce greenhouse gas and meet local environmental, energy and economic objectives.

EPA has developed the Landfill Methane Outreach Program to encourage landfill owners and operators to install energy recovery systems. The program identifies landfills with the potential to produce energy cost-effectively. The program also provides a structure for federal and state governments to explore ways to overcome federal, state and local barriers to the development of landfill gas recovery projects. This includes creating incentives for the development of landfill gas recovery sites and enhancing public understanding.

Recovery of landfill gas began in the early 1970's. One local example is the Chicopee Landfill, which currently produces enough electricity for the Chicopee Municipal Lighting Plant to power some 2,400 homes annually.

Anyone interested in landfill gas recovery can obtain a copy of the Implementation Guide For Landfill Gas Recovery Projects in the Northeast, recently released by the Northeast Regional Biomass Program. The guide provides general background information for the decision maker, including definitions and characteristics, criteria for a successful project, barriers to success and recommendations to overcome these barriers. The guide also examines and evaluates candidate landfill sites in the Northeast. To obtain a copy, contact the CONEG Policy Research Center, Inc. at (202) 624-8454.

For more information on landfill gas recovery, contact DOER's Senior Policy Analyst, Irving Sacks, at (617) 737-4732, ext 132 or, Sean T. Griffin, Environmental Engineer, Mass. Department of Environmental Protection, at (617) 292-5500.

1995 SUN DAY CELEBRATION PLANNED

SUN DAY: A Campaign for a Sustainable Future seeks participants for SUN DAY 1995 activities, which will be officially celebrated on Sunday, April 23, 1995. SUN DAY 1995 is the second annual national celebration of energy-efficient technologies and renewable energy such as solar, wind, geothermal, biofuels, hydroelectric and solar-hydrogen.

SUN DAY 1995 seeks to educate members of the general public, the media, decision makers and others about the status, potential and benefits of renewable energy and energy efficient technologies. The day will showcase programs and technologies sponsored by participating environmental, consumer, labor, student and religious organizations, businesses, utilities and government agencies. Lastly, SUN DAY 1995 will encourage new public and private initiatives to expand further use of renewable energy and energy efficient technologies.

SUN DAY 1995 will feature various one-day educational activities such as fairs, tours, seminars, news conferences and exhibits.

If your organization would like to sponsor or participate in SUN DAY 1995, contact the SUN DAY Campaign, at (301) 270-2258.

**ENERGY FACT:
LAST YEAR MASSACHUSETTS
SPENT MORE THAN \$11 BILLION
ON ENERGY.**

ENERGY EFFICIENCY AND RENEWABLES ON THE INFORMATION HIGHWAY!

FEDERAL

Energy efficiency and renewable energy information is now even more accessible through the U.S. Department of Energy's new multimedia, Internet-based information system, EREN. EREN — the "Energy Efficiency and Renewable Energy Network" — is a gateway to worldwide sources of maps, images, video, sound, text and information on energy efficiency and renewable energy technologies.

EREN is a World Wide Web site that links to various Internet information sites. EREN provides access to bibliographic information, bulletin boards, databases, information servers, documents and discussion groups. Available information covers alternative fuels, energy efficiency, wind energy, photovoltaics, solar energy and many other energy efficiency and renewable energy topics.

EREN can be searched by alphabetical listing, broad subject divisions, type of service or organization, WAIS keyword search and other Internet search tools. To use EREN, you need an Internet connection and a "browser" configuration. (EREN uses the Lynx, XMosaic, MacWeb and Mosaic for Apple Macintosh or for Microsoft Windows browsers.) EREN is accessed through the network's Uniform Resource Locator (URL) <http://www.eren.doe.gov>.

EREN was created for the DOE Office of Energy Efficiency and Renewable Energy by Argonne National Laboratory, the National Renewable Energy Laboratory and Oak Ridge National Laboratory.

For more information on EREN, write, call or e-mail DOE's Energy Efficiency and Renewable Energy Clearinghouse, PO Box 3048, Merrifield, VA, 22116, 1-(800)-363-3732, ENERGYINFO@delphi.com.

Governor's Energy Award Honors Innovative Energy Projects

Lieutenant Governor Paul Cellucci joined Commissioner Stephen Remen on December 7 to announce the winners of the 1994 Governor's Energy Award. The Award honors exemplary Massachusetts projects that help the Commonwealth meet its energy goals. The Award program is intended to increase public awareness of new and useful energy related initiatives so that successes may be replicated by others.

DOER issued a call for nominations through the Summer issue of the Energy Report and a statewide news release. Nominations were judged competitively on outstanding attributes, innovation, quantified energy savings, environmental and economic impact and the ability to promote energy awareness. Projects implemented through a partnership were favored.

The 1994 Governor's Energy Award recognizes outstanding efforts in four categories: Industry and Business, Renewable Energy, Transportation and Education.

We encourage you to find out more about these exemplary projects by contacting the names listed under each project.

INDUSTRY AND BUSINESS: 100 FEDERAL STREET ENERGY EFFICIENCY PROJECT

From the outside, the building at 100 Federal Street, owned by 100 Federal Street Limited Partnership and managed by Compass Management and Leasing, Inc., may not stand out from other high-rises in downtown Boston. From the inside, however, this 1.36 million square foot building models state-of-the-art energy efficient engineering and boasts annual energy savings of almost \$664,000. Boston Edison contributed \$2.8 million of the total \$4.6 million invested in the design and installation of a variety of energy efficient technologies with paybacks of 1-4 years. Technologies include lighting, air handling systems, cooling tower and pumps, an energy management system and energy saving window film. The building upgrade, co-sponsored by the building owner, was completed with the engineering assistance of Shooshanian Engineering in 1992. The



Lt. Governor Cellucci, Commissioner Remen and 1994 award winners at State House award ceremony.

efficiency measures save more than 7.5 million kwh annually — enough electricity to power the lights and appliances in more than 1,200 homes in Massachusetts for one year.

Contact: James Bakas of Boston Edison, at (617) 424-2255.

RENEWABLE ENERGY: THE RICHARD F. WHEELER WIND GENERATION SITE

The Richard F. Wheeler Wind Generation Site, in Princeton, produced its first kilowatt of electricity in 1984. Ten years and over 2 million kilowatt hours of electricity later, it remains the longest, continuously operating municipal utility wind generation site in the United States. The project, created from town residents' search for an environmentally sound power source, consists of eight 40kw turbines mounted on 100-foot towers. For many years the only operating wind farm in New England, the project has laid a foundation for the development of windpower in Massachusetts. It provides an excellent resource for educators, environmentalists, alternative energy proponents, and energy providers. *Contact: Sharon Staz, Princeton Municipal Light Department, at (508) 464-2815.*

TRANSPORTATION: THE CAMBRIDGESIDE GALLERIA SHUTTLE BUS SYSTEM

The Cambridgeside Galleria Shuttle Bus System of the Cambridgeside Galleria Mall is a creative solution to the unique transportation and siting problems of the urban mall. While malls normally generate a great deal of traffic, the Galleria shuttle, called "The Wave," provides a breath of fresh air — almost literally. The shuttle, sponsored by New England Development and by Lotus Development Corporation, was required by the City of Cambridge Planning Board as a condition for the Galleria's permit. The shuttle links the mall to public transportation on a reliable schedule at no cost to the riders. In 1993, some 600,000 people used the shuttle, reducing both traffic congestion and air pollution. The City of Cambridge has maintained an active role in the publicity and administration of the shuttle system. *Contact: Susan Goldwitz, City of Cambridge Environmental Program, at (617) 349-4604.*

EDUCATION: "HOW MANY LIGHT BULBS DOES IT TAKE TO CHANGE A PEOPLE?"

"How Many Light Bulbs Does it Take to Change a People?" is a comprehensive, interdisciplinary student activity package for teachers, designed to impress upon middle school students the value and techniques of energy and environmental conservation. The curriculum was developed through a collaborative effort of the New England Electric System Companies, including Massachusetts Electric Company, and the Conservation Law Foundation. Materials were written and produced by The Writing Company. The curriculum involves students in various hands-on activities, such as a home energy audit, electric demonstrations, reading and writing lessons, math and group projects. Since 1990, the curriculum has been used by more than 290 schools. *Contact: Jerry Hanna of Massachusetts Electric, at (508) 366-9011.*

CALENDAR/WINTER 1995

JANUARY

13 *Application deadline for Technical Assistance Grants Institutional Conservation Program*. Contact: Laura Merrill, Program Manager, (617) 727-4732, ext 146

17 *New England Energy Task Force Meeting*, Boston. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705

19 *Health and Energy Work Group*, Boston, MA. At Boston University, Charles River Campus, 10:00 a.m. Contact William Costa, (617) 353-9162.

FEBRUARY

9 *Health and Energy Work Group*, Boston, MA. At New England Medical Center, 10:00 a.m. Contact Marcello Ranalli, (617) 956-6436.

17 *Application deadline for Energy Conservation Measures Grants, Institutional Conservation Program*. Contact Laura Merrill, Program Manager, (617) 727-4732, ext. 146.

21 *New England Energy Task Force Meeting*, Boston. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

MARCH

11-12 *1995 New England Environmental Network Conference*, Tufts University, Medford, MA. Contact The Center for Environmental Management, (617) 627-3486.

15 *Deadline for submission of nominations for DOE's 1995 National Awards Program for Energy Efficiency and Renewable Energy*. Contact Susan Gedutis, Public Information Officer, at (617) 727-4732, ext. 134.

21 *New England Energy Task Force Meeting*, Boston. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

27-30 *WINDPOWER '95, American Wind Association (AWEA) 25th Annual Conference and Exhibition*, Washington, DC. Contact Linda Redmond, AWEA Meetings Coordinator, (202) 383-2500.

26-31 *1995 Affordable Comfort Conference*, Pittsburgh, PA. Contact Diane Tirio, Affordable Comfort '95, (412) 373-0482.

APRIL

18 *New England Energy Task Force Meeting*, Boston. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

23 *SUN DAY 1995*, Boston, MA. Contact the SUN DAY Campaign, (301) 270-2258.

28-29 *Massachusetts State Science Fair*, Massachusetts Institute of Technology, Cambridge, MA. Contact the Science Fair Office, (617) 432-2249.

HAPPY TRAILS...

The Division of Energy Resources wishes a fond farewell to David Dilts, former Alternative Fuels Program Manager and coordinator for the Massachusetts Electric Vehicle Demonstration Program. Dilts, who worked at DOER since 1987, has taken a position at Boston Edison as Electric Vehicle Product Manager. Best of luck, Dave!

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The Massachusetts Division of
Energy Resources.

Suggestions, calendar submissions, questions and input are invited. Send to Editor, *Energy Report*, The Massachusetts Division of Energy Resources, 100 Cambridge Street, Room 1500, Boston, MA, 02202. DOER staff members can be contacted at (617) 727-4732. *Energy Report* is printed on recycled paper using soy ink.

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF ENERGY RESOURCES

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JUL 25 1995

DPU Opens Investigation Into Electric Utility Market Restructuring

University of Massachusetts
Depository Copy

STATE

Is the electric utility industry poised on the edge of major change? This February, the Department of Public Utilities (DPU) opened an extensive investigation into the creation of new electric utility industry rules to facilitate a competitive electric marketplace.

Electric industry restructuring could allow electric customers to choose their energy suppliers in much the same way as they now choose their long-distance telephone carriers. Restructuring could deregulate electric power generation and introduce market competition into an industry that has, for years, been widely accepted as a natural monopoly. Deregulation could be the catalyst to lead electric suppliers to cut costs and reduce electric prices in Massachusetts, which are among the highest in the nation.

As presently structured, electric utilities are monopolies which bundle three important functions. The first is generation of electricity at the power plants. The second function is transmission, including the high-tension lines and supporting system services. Lastly, there is distribution: the local wires, poles and utility boxes that bring electric power to its final destination. Energy efficiency programs and customer services are included in the distribution function. The electric bill delivered to each customer's mailbox incorporates all of these costs.

The DPU's investigation could potentially lead to the "unbundling" of this monopoly. In the restructured industry, power generation will most likely be deregulated, opening the door for many independent power producers and suppliers. Transmission and distribution are likely to remain regulated functions. Costs of generation and retail supply, as well as "wires fees," could be reflected in one electric bill — which could be provided to customers through the distribution company or by a competitive retailer.

While the motivation behind restructuring of the electric industry is relatively clear cut — to reduce power costs — the issues that must be considered

are complex. A successful market structure must cut costs while offering high-quality, reliable and non-discriminating service to all electric customers, large and small. At the same time, the new structure must ensure that companies maintain current momentum in the areas of energy conservation, environmental protection and services for low income and elderly customers.

INVESTIGATION Continued on page 5.

HOLYOKE: LOW INDUSTRIAL ENERGY RATES BOOST LOCAL ECONOMY

BUSINESS

Thanks to special energy cost breaks provided to new or expanding industrial customers, the economy in Holyoke, MA is on the

rebound. This small industrial city in western Massachusetts has attracted 20 new companies and 400 new jobs over the past 18 months, according to Bob Bateman, director of the city's Economic Development and Industrial Corporation (EDIC) and the Holyoke Office of Industrial Affairs.

Under the city's Economic Development Incentive Program, EDIC and Holyoke Gas and Electric Department offer new or expanding industrial customers a power rate discount of 20% in the first year, 15% in the second and 10% in the third. In return, industrial customers enter into a 10-year contract for service with Holyoke Gas and Electric. Holyoke Water Power Company, which exclusively services industrial customers, offers similar discounts.

On the residential side, Holyoke Gas and Electric offers first-time home buyers a three-year break on gas and electric bills. New home buyers get a 30% discount the first year, 20% the second year and 10% in the third year.

For more information, contact Bob Bateman at the Holyoke EDIC, at (413) 534-2200.

FROM COMMISSIONER REMEN:

Competitive pressure on the electric industry is growing. With it, activity in regulatory agencies has increased to help usher in a new era of electric service. Deregulation of the electric industry often is compared to the breakup of AT&T, but, while AT&T was a regulated monopoly, many of the issues attendant to electric industry restructuring are unique.

Recurring issues in the electric industry restructuring debate include: the environmental impacts of transitioning from regulated to non-regulated sources of energy supply; the potential for loss of electric company investments previously approved by regulators; the continuation of reliable and safe electric power, and, the preservation of social programs, such as lifeline rates, currently offered by regulated utilities. This is a formidable set of challenges, but not, in my estimation, insurmountable.

We can maintain environmental policy and programs in part due to the substantial technological progress we have made since competition entered the electric generation arena. In the last twelve or so years, technological improvements, spurred by a competitive marketplace, have dramatically lowered emissions and increased the efficiency of electric generation technologies. In addition, support for utility energy efficiency programs has led to the development of a competitive efficiency industry that offers cost-effective products and services. Continuation of efficiency efforts is essential, as is ongoing support for the development and deployment of renewable and other forms of sustainable energy technologies.

Another essential ingredient in the restructuring discussion is the recognition of electric utilities' past investments, for which government regulators promised recovery. This recognition, whether required on legal and/or moral grounds, would facilitate a timely resolution of the investment issue. Failure to address these obligations equitably will surely doom any restructuring effort to endless equivocation and, perhaps, litigation by parties who fear financial harm.

A variety of options have already been identified to ensure safety, reliability and the continuation of worthwhile social programs in a restructured environment. Selection of the appropriate options can and should be made once the form and nature of the restructured industry is adequately defined.

Another issue, though of lower profile, is the regional impact of restructuring individual states' electric utilities. Due to the regional nature of our electric generation and supply system, individual states' action could induce cross-border inconsistencies. Efforts of regional organizations and the Federal Energy Regulatory Commission can help prevent such inconsistencies.

Stakeholders will ultimately resolve these issues by working together to fashion a mutually acceptable arrangement. We will continue to support these efforts to seek an amicable resolution which will allow us to reap the benefits of a competitive electric marketplace.

STEP PROMOTES NEW ENVIROTECHNOLOGIES

BUSINESS

To help put innovative technologies on the road to commercial viability, the state has created the Strategic Envirotechnology Partnership (STEP). The program combines the resources of the Executive Office of Environmental Affairs, the Executive Office of Economic Affairs, the Division of Energy Resources and the University of Massachusetts to position the Commonwealth at the forefront of new environmental and energy-efficient technologies. (See *Energy Report*, Summer, 1994.)

STEP offers program clients a variety of services to help bring their new technologies to market. These include technology assessments performed by engineers and scientists, product testing and monitoring services, expedited permitting and guidance, and business planning assistance.

For more information on STEP, call MOBD's Envirotechnology Specialist Tom Black at (617) 727-3206.

NEW PARTNERSHIP TO PROMOTE ENERGY SAVINGS IN NEW CONSTRUCTION

STATE

To ensure that construction practices in Massachusetts are aligned with state energy goals, a consortium of state agencies,

building professionals, efficiency advocates, utilities and other energy suppliers are forging a new partnership. The goal is to capture significant, long-term energy savings in residential and commercial new construction.

Called the Massachusetts "Better Buildings Partnership," the program will mean energy cost savings to businesses and homeowners. The effort proposes to increase energy efficiency in new construction through energy building code training and technical assistance for the design, construction and enforcement communities. It is hoped that the Partnership will help transform the market by supporting contractors who already build to code or exceed code. Upgrades to the state building code will also be considered.

The proposed Partnership has already received support from utilities, regulators and the building community. DOER and the state's Board of Building Regulations and Standards, the agency that administers the uniform state building code, developed the program concept with help from the Boston Edison Settlement Board. Funding is now being sought from Massachusetts stakeholders and the U.S. Department of Energy.

To establish its foundation, the Better Buildings Partnership will first research current practice and energy building code compliance in the state to identify areas of greatest need. The Partnership is expected to be in place by Summer of 1995.

For more information, contact Diane Daily or Anne Gross at DOER, (617) 727-4732.

**ENERGY FACT:
THE U.S. DOE
ESTIMATES THAT
A 30% IMPROVEMENT
IN U.S. BUILDING
EFFICIENCY COULD
REDUCE ENERGY BILLS
BY \$75 BILLION OVER
THE NEXT 15 YEARS.**

1995 AMERICAN TOUR DE SOL TO ROLL THROUGH MA ROADS AND CLASSROOMS

REGION

Students and electric vehicle (EV) enthusiasts can learn more about the EVs of today and tomorrow when the 1995

American Tour de Sol rolls through Massachusetts on May 22-25. This is the seventh year for the national electric and solar electric vehicle road rally championship, which promotes zero emission transportation. The race starts May 21 in Waterbury, CT. Stops are planned in Northampton, Greenfield and Lexington, MA, en route to the finish line in Portland, ME on May 26.

The race is organized by the Northeast Sustainable Energy Association (NESEA). This year, NESEA, with sponsorship by the Division of Energy Resources, is offering activity packets and field trips to elementary, middle and high-school teachers who would like to use the event to teach students about electric-powered transportation.

For more information about the race and its educational opportunities, contact the Northeast Sustainable Energy Association, (413) 774-6051.

STATE OFFICIALS GIVE CNG THE GO-AHEAD



Pictured, from l to r: Jerold A. Gnazzo, Registrar of Motor Vehicles; Hugh Saussy, Jr., U.S. DOE; Commissioner Stephen J. Remen, DOER; Commissioner Ilyas Bhatti, Metropolitan District Commission; Commissioner Laurinda T. Bedingfield, Mass. Highway Department; Boston Mayor Thomas Menino; Cathleen Douglas Stone, Boston Chief of Environmental Services; Martin Pierce, Boston Fire Commissioner; Secretary James J. Kerasiotes, Executive Office of Transportation and Construction; Kevin MacCurtain, Deputy Fire Chief; Secretary Trudy Coxe, Executive Office of Economic Affairs; Chet Messer, President, Boston Gas; F. James Kauffman, State Fire Marshall; Alan R. McKinnon, Mass. Turnpike Authority; Paul Cook, District Fire Chief. Also pictured, in bus: Linda Dailey Barbo, Director of Public Relations, Mass. Turnpike Authority; Phil Johnson, Weston Public Schools.

LOCAL

In a Boston City Hall ceremony on January 3, 1995, city and state officials signed a resolution to allow compressed natural gas (CNG) vehicles through Boston's tunnels and underpasses. The resolution followed a year-long technical study of the comparative safety of gasoline and compressed natural gas. After the ceremony, Boston Fire Marshall Martin Pierce and others boarded a CNG school bus for the first-ever trip of a CNG vehicle through the Callahan and Sumner tunnels. The bus was provided by the Town of Weston. A variety of CNG vehicles from private vehicle fleets were on display at City Hall Plaza throughout the morning, along with a full-size model of a CNG refueling station provided by Boston Gas.

STATE WINS GRANT TO DEVELOP STANDARDS FOR EV INFRASTRUCTURE

FEDERAL

While auto manufacturing experts work to extend electric vehicle battery capacity, state regulators are developing standards for recharging equipment to ensure that the "plugs" will always match the "outlets." These efforts recently gained momentum when DOER won \$66,000 from the U. S. Department of Energy (DOE). The grant will help fund the Massachusetts Electric Vehicle Infrastructure Program, which will develop uniform standards for electric vehicle recharging stations.

When electric vehicles or any alternative fuel technologies are introduced to the market, infrastructure must be developed to support them. But even before the widespread installation of publicly accessible, multi-user electric recharging stations, a variety of regulatory issues must first be addressed.

Under the EV Infrastructure Program, DOER will examine zoning, safety regulations and the removal of any restrictions on the sale of electricity as a transportation fuel. DOER also will perform a technical evaluation of various recharging technologies. Finally, DOER, with technical assistance from utility companies, will develop uniform specifications for recharging station equipment and create rules for the location, installation and long-term maintenance of recharging stations.

The program will also address safety concerns. Currently, electric vehicle batteries take six to eight hours to recharge, which is fine for short trips such as commuting, but may not be feasible for longer journeys. "Quick charging" is an attractive option, but there are obvious concerns about the safety of the inherent higher voltage and electric current. The program will determine steps to

ensure the safety of the person at the charging station, or "pump." Additionally, the program will explore the effect of quick charging on battery performance and life.

Program partners include the Massachusetts Highway Department, the Massachusetts Turnpike Authority, the Massachusetts Department of Environmental Protection, the Northeast Alternative Vehicle Consortium, and the Northeast States For Coordinated Air Use Management (NESCAUM). Private sector members of the partnership are the Boston Edison Company, Massachusetts Electric Company and the Commonwealth Electric Company.

For more information, contact DOER's Director of Programs Jack Bevelaqua at (617) 727-4732, ext. 126.

How can environmental sustainability be assured in a competitive electric market?

Because of major changes imminent in the electric industry, this issue of the *Energy Report* provides a forum for industry stakeholders to discuss electric industry restructuring. We invited Armond Cohen, of the Conservation Law Foundation, and Mark Drazen, of Drazen-Brubaker Associates, Inc., to comment on the role of environmental sustainability in a competitive electric market. *Facts and opinions expressed in guest editorials are those of the authors and not necessarily those of DOER.*

Can Industry Restructuring Be "Green"?

By Armond Cohen

How Massachusetts and New England restructures its electric power industry is the most significant environmental issue the state will face in this decade.

The electric industry is the state and region's largest industrial air polluter. Utilities produce the vast majority of the region's acid rain-causing chemicals and a third of its smog. They are the dominant emitter of particles which researchers believe cause respiratory disease and premature death; of airborne mercury which poisons much of New England's fresh water fish; and of carbon dioxide, implicated in global warming. Research suggests that fossil fuel power plants also endanger our forests and aquatic ecosystems through toxic deposition and leaching.

The region's power plants, among the largest industrial consumers of water, lead to the degradation of estuaries and rivers. The region's eight remaining nuclear power plants annually generate many tons of high level radioactive waste — which is stored on-site until "permanent" storage options are secured. The electric power industry's environmental impact far exceeds its economic impact: electricity represents only 3% of the state's gross economic output, but produces 30-70% of its emissions.

The rules under which this industry operates will determine the health of New England's citizens and environment. Foresighted Massachusetts utility regulators have taken the lead in cleaning up the region's power system. Energy conservation programs, for example, have reduced electric demand by 3% and — by displacing the dirtiest plants — have reduced utility emissions by twice that amount. Gas repowering of the region's aging oil and coal plants has also reduced emissions. And, led by New England Electric and supported by the Department of Public Utilities, the region has begun to invest in commercial renewable energy sources such as wind and biomass — which provide fuel diversity and avoid excessive reliance on gas, especially as our nuclear plants are likely to shut down well before their licenses expire.

Environmental progress is at risk if we restructure the industry foolishly. Energy efficiency, renewable energy and gas repowering are cost-effective in the long run: Massachusetts utility conservation programs since 1990 have saved nearly \$400 million of electricity. But, often these investments exceed the cost of running existing fossil and nuclear units in the short run. They will be greatly diminished if we restructure

Continued next page, column 1.

How Can a Competitive Electric Industry Promote Environmental Goals on Both the Demand Side and the Supply Side?

By Mark Drazen

The question is really not *whether* a competitive market structure can achieve environmental goals. Rather, ask *how* industry restructuring can be used to remove existing regulatory and business impediments to these goals. What is likely to happen, even without restructuring?

As the industry evolves, I expect that the now-integrated utility companies will separate supply (generation) from delivery (distribution). "Gencos," which produce power, will compete to supply electricity, and "discos," or distributors, will deliver it. Customers will negotiate directly with gencos for price of supply. All gencos will have access to an independent regional transmission grid and an independent generation dispatch service. *Independence* means that the grid and dispatch pool have no financial interest in any genco. This structure would give all gencos and users equal and open access to one another. New generation could be built and bought on a competitive basis, i.e., when customers want it, at prices they are willing to pay.

An inherent tension lies in the current structure, where utilities are both suppliers and deliverers of electricity. Energy conservation and load management is provided on the delivery end, but most of the money is made on the supply end. "Decoupling" revenues from sales is one way to remove the conflict, but this also decouples the utility's earnings from its efficiency in all areas.

Will restructuring reduce conservation and load management activities? As utilities, regulators and customers try to increase efficiency and reduce costs in all other areas, they will become more demanding about conservation and load management. Conservation and load management programs are already being re-examined as utilities strive to reduce costs.

How can a competitive structure help? First, the structure would produce more market-based rates, so customers would get better information. Second, discos would be able to aggressively offer energy conservation as an alternative to kilowatt-hours, because they will no

Continued next page, column 2.

**ENVIRONMENTAL
PROGRESS IS AT RISK
IF WE RESTRUCTURE
THE INDUSTRY
FOOLISHLY. - COHEN**

COHEN, CONTINUED

our electric industry as a short-term commodity market. The United Kingdom has learned this painful lesson, and is now struggling to implement the very environmentally-sensitive energy policies that Massachusetts has already put in place.

How can industry restructuring and the environment be reconciled? First, acknowledge that there is a conflict, and that specific policies are needed to solve it. Massachusetts should not sit on its hands, waiting for Congress to enact tougher emissions controls. The wisdom of our energy policy to date is that, by commercializing energy efficiency and renewable technologies, we avoid creating an expensive mess in the first place.

Second, level the playing field between old, dirtier power plants and their new competitors. Older plants were substantially exempted from Clean Air Act requirements and so benefit from a significant "pollution subsidy." Old plants should be required to meet the same pollution standards as new ones in the competitive market.

Third, recognize the continuing importance of bringing clean technologies to market. Energy efficiency is one of the state's few environmental strategies that saves more than it costs, and renewable energy is critical to diversity and sustainability. Development of these resources must continue — through modest investment, possibly at the distribution company level, as is now being implemented in the United Kingdom.

It is fashionable to argue that pro-environmental energy regulation has no place in the "global marketplace." But Massachusetts' competitive edge lies in its high quality of life and environment. We will never thrive economically by structuring our energy system to produce the cheapest possible electricity, which degrades air quality, runs up health care costs, and threatens our forests, lakes and oceans. As we restructure our electric industry, our health in every sense — physical, economic and environmental — depends on whether we adopt strategies to promote environmental protection, energy efficiency and clean generating technology.

Armond Cohen is a Senior Attorney and Energy Project Director at the Conservation Law Foundation.

**ENVIRONMENTAL
SUSTAINABILITY...
WILL BE THE NATURAL
BY-PRODUCT OF A
COMPETITIVE ELECTRIC
MARKET. - DRAZEN**

DRAZEN, CONTINUED

longer have a vested financial interest in the gencos' financial performance.

Would a competitive structure change the mix of old plants as compared to current trends? Does restructuring create an incentive to keep old, presumably "dirty" plants running in order to avoid the cost of building new, efficient ones? This incentive already exists. The current regulatory procedure discourages cost-conscious, competition-conscious utilities from building new plants because the cost of new capacity increases rates and thereby guarantees battles over the "need" for these new plants.

New generation choices are already driven primarily by cost, with environmental considerations further limiting choices. Most new supply being planned is gas-fired because that is the cheapest and is expected to remain so. Gas-fired plants are also "cleaner." Utilities are already using competitive bidding for new supply, which emphasizes low-cost power. What would change is that it would actually become easier to replace old plants with new, cleaner plants, because full competition would allow customers to choose whether and when to pay for a new plant. Environmental, land use and other siting restrictions would continue to apply to new plants.

What about renewables? Cost pressures on utilities will likely keep this sector small (limited to "set-asides") until renewable resources become truly cost-competitive. Competition — more access — may help by promoting technological improvements, reducing the cost of alternate technologies. Next, people who are willing to pay a bit more for "green" power will actually have that option. With integrated utilities, customers cannot control where their dollars go. Retail competition will assure customers that their preferred gencos get the dollars.

Environmental sustainability, in the form of energy conservation and load management programs, will be the natural by-product of a competitive electric market. Increasing efficiency will be an important catalyst to help cut costs and increase profits.

Mark Drazen, CEO of Drazen-Brubaker & Associates, Inc., is a consultant on utility competition and restructuring issues throughout the United States and Canada.

INVESTIGATION: From page 1

Another concern is how, in the restructured industry, utilities will recover the costs of already-existing investments in power plants. These investments were made in expectation of long-term paybacks from a relatively permanent customer base. In the new structure, however, large industrial customers might choose to leave the system for lower rates from competitive suppliers. Transition rules must ensure that utilities can fairly recover these potentially "stranded" investments without inflating rates for the remaining customers.

To open its investigation, the DPU sought public comment on a list of 43 questions. These questions consider how a restructured industry could promote competition and benefit customers, whether and how to allow some or all customers to shop for their own power supplier, how restructuring could be implemented, and what rules should govern the new market.

Initial comments were due to the DPU by March 31. To allow all viewpoints to be heard, the DPU may hold public hearings in mid-April. Second-round comments must then be filed by Friday, May 5. After comments have been reviewed, the DPU will determine whether to hold further discussions or hearings, or issue an order on the results of the investigation.

To complement these activities, DOER in late February briefed the Massachusetts legislature on electric industry restructuring. The briefing provided information on many of the key issues. Presenters represented the Joint Committee on Energy, the Executive Office of Economic Affairs, the Executive Office of Environmental Affairs, the DPU, the Office of the Attorney General, DOER, the Associated Industries of Massachusetts and New England Electric Company.

For more information on the DPU inquiry or on restructuring, call DOER's Director of Policy Fran Cummings or General Counsel Robert Sydney at (617) 727-4732.

MASS. SEEKS TO CONSOLIDATE SUPPORT FOR GREEN TRANSPORTATION

STATE

In an effort to boost alternative fuel vehicle (AFV) technology and further its compliance with federal air quality requirements, the state early this year called together interested stakeholders to an Advanced Vehicle Technology Incentive Workshop. State legislators, policy makers and representatives from more than 35 private companies and private non-profit groups attended to brainstorm strategies to increase the use of AFVs in Massachusetts.

In recent years, various legislative bills have been proposed to promote a specific fuel or AFV technology, but, to date, none has been enacted. Recognizing that some of these bills are consistent with state economic, environmental and energy policy goals, the state held the workshop to consolidate suggestions and determine action for government, private industry and environmental groups. The workshop yielded a number of valuable recommendations covering industry incentives, fleet vehicle procurement, government action, consumer incentives and technology development. These recommendations are now under consideration by state agencies.

The workshop was hosted by the Executive Office of Environmental Affairs, the Executive

Office of Economic Affairs and the Division of Energy Resources (DOER) with the Northeast States for Coordinated Air Use Management. It is hoped that increased understanding of the issues surrounding AFVs, coupled with significant infrastructure development in the next few years, will create a favorable climate for the wide-scale integration of AFVs into government and private fleets.

DOER has already acted on one key recommendation from the workshop. On February 28, the agency convened state fleet operators and alternative fuel suppliers to identify steps to bring all state vehicle fleets into compliance with the National Energy Policy Act mandate. According to the mandate, 10% of all new state fleet vehicle acquisitions, beginning in model year 1996, must be alternative fuel vehicles. Purchases must increase to 15% in 1997, 25% in 1998, and 75% in the year 2000 and thereafter.

State fleet managers and representatives from the natural gas, propane and electric vehicle industry attended the meeting to discuss the mandate, penalties of non-compliance, types of fuels and vehicles available, and funding options. A number of questions were raised that require resolution before the state can comply with federal law. A follow-up meeting

to address these questions will be held in mid-April.

For more information, contact DOER's Deputy General Counsel Christine Constan Erickson at (617) 727-4732, ext. 166.

NORTHEAST SUPPORTS
ENERGY CONSERVATION
AND RENEWABLES,
POLL SAYS

A recent national poll reveals strong bipartisan support for continued federal funding of energy efficiency and renewable energy programs. The poll showed that, in the Northeast: 75% believe resources should be redirected to efficiency and renewables; 63% believe nuclear and fossil fuel research and development funds should be cut; 89% support the development of public/private research partnerships; and, 81% favor tax incentives for conservation and renewable energy. The poll was commissioned by a coalition of energy groups in response to potential DOE budget cuts.

WIND POWER A WINNER ON NANTUCKET

STATE

The island town of Nantucket may have found a new solution to an old problem. Because the island lacks space to expand its landfill and the cost of off-island disposal is prohibitive, Nantucket decided to build a solid waste processing facility. However, costs to power the facility using existing energy sources on the island threatened to increase to the municipal operating budget, so Nantucket turned to DOER for help in finding a less expensive energy alternative for the planned facility.

Nantucket asked DOER to fund an analysis of a variety of electricity-generating resources. DOER chose to study three indigenous resources: wind, biomass and landfill methane gas. The evaluation of biomass and landfill gas potential found that, while these resources are available in quantities sufficient to generate some electricity, the town's landfill is too small to make either application cost effective. Wind power surfaced as the cleanest, least expensive option for the island.

Wind data gathered at the island's airport and other locations show that the wind resource is uniform across the island and comparable to some of the best sites in the country. To test this at the landfill site, wind monitoring equipment was installed in August 1994.

The study found no major physical, environmental or regulatory obstacles to development of a wind power plant at the landfill. However,

to maintain the unique aesthetic and historic characteristics of Nantucket, the study recommended the use of less obtrusive, tubular wind towers for a more pleasing appearance.

Depending upon the number and size of wind turbines installed at the landfill, preliminary cost estimates for the wind power range from 4.5¢ to 8¢ per kilowatt-hour. According to Jeffrey Willette, superintendent of the Nantucket Department of Public Works, "Right now, our retail electric rates are 13¢ per kilowatt hour. The lower rates are good news to us."

Wind power is a win-win energy option for Nantucket. This renewable resource will help the island preserve its natural beauty and clean air, while producing less expensive energy. DOER's study estimates that, if six wind turbines are installed at the landfill, the sale of surplus electricity to the Nantucket Electric Company could net the town up to \$200,000 annually. Typically, this money would leave the local economy to pay for non-indigenous fuel resources. The wind generation will also spare the island some 100 tons of emissions that would otherwise result from the use of fossil fuels.

For more information, contact DOER's Dispersed Generation Program Manager Nils Bolgen at (617) 727-4732, ext. 178.

U. S. DOE INVITES AWARD NOMINEES

FEDERAL

The U.S. Department of Energy invites nominations of outstanding individuals for the 1995 Sadi Carnot Award in energy conservation and the John Ericsson Award in renewable energy. The awards recognize significant scientific and technological achievements in energy conservation and renewable energy. Each award consists of a citation, a gold medal and \$10,000.

The awards recognize either a single noteworthy achievement or a sustained level of lifetime accomplishment. Candidates may be at any stage in their professional careers. Nominations will be judged primarily on the basis of scientific and technical merit and achievement. Managerial ability and innovative talents will also be considered. Nominations are due May 15, 1995.

For more information, contact the U. S. DOE's Mary Pitt at (202) 586-9114.

U. S. DOE TO SPONSOR SATELLITE TELECONFERENCE ON EFFICIENT MOTOR SYSTEMS

FEDERAL

The U.S. Department of Energy (DOE) estimates that industry can save up to \$13 billion in energy costs annually simply by increasing the efficiency of electric motor systems (see *Energy Report*, Summer, 1994.) To this end, DOE will broadcast a national teleconference for large industrials on Tuesday, May 23, 1995. DOER will host a teleconference site at the Massachusetts Institute of Technology (MIT), Boston, MA. The teleconference is sponsored by DOE's Motor Challenge Program.

Dubbed "Efficient Motor Systems: Strategies for Success," the teleconference will update participants on electric motor system efficiency management and evaluation techniques. It also will show large industrials specific examples of commercially available technologies and decision making tools to increase profitability and productivity, and reduce downtime and operating costs. A panel of industry experts will be on-line to answer participants' questions during the teleconference.

To find out more about the DOE Motor Challenge Program in Massachusetts, contact DOER's Senior Engineer George Miller at (617) 727-4732, ext. 168. For more information on teleconference sites, contact Public Information Officer Susan Gedutis at ext. 134.

EDUCATION MATERIALS READY FOR THE CLASSROOM

The U. S. Department of Energy's Energy Efficiency and Renewable Energy Clearinghouse (EREC) is now offering "Hands On" Energy Education Kits for elementary, middle and high school teachers. To receive a free kit, contact EREC at 1-800-DOE-EREC (363-3732), or EREC, P.O. Box 3048, Merrifield, VA 22116.

Contact: Sharron Brown, 1-800-DOE-EREC.

NICE³: DOER SEEKS INDUSTRIAL EFFICIENCY PROJECT ABSTRACTS

REGION

In preparation for the next round of the National Industrial Competitiveness through Energy, Environment and Economics (NICE³) grant program, DOER is again seeking 2-page abstracts on innovative technology demonstration project proposals. The next NICE³ solicitation is anticipated to be announced next Fall.

NICE³ is an innovative, cost-sharing grant program operated by the U.S. Department of Energy and the Environmental Protection Agency. The program provides a one-time grant to help offset start-up risks for innovative technology demonstration projects that significantly conserve energy and energy-intensive feedstocks, reduce industrial waste and improve industrial cost-competitiveness. NICE³ awards up to \$425,000 and requires a cost-share of at least 50% of the total project cost. Projects must partner the efforts of industry and a state agency.

If your company has an innovative, technology demonstration project to propose, please contact DOER for instructions on preparing the project abstract. Abstracts will be reviewed by DOE/EPA for technical feasibility, innovation and program eligibility. DOER will return the feedback on these abstracts to applicants within 3 weeks. Companies that propose eligible projects will also receive further application instructions.

For more information, contact Dan Sardo at (617) 727-4732, ext. 130.

DISTRIBUTED UTILITY WORKSHOP SLATED FOR SPRING

The Boston Edison Settlement Board, the Massachusetts Photovoltaics for Utilities Working Group (PV4U) and DOER will host a workshop on Least Cost Distributed Utility Planning in late April or early May. The workshop will provide information to Massachusetts utility companies and policy makers on the distributed utility concept, and identify opportunities to implement distributed utility planning. Date and location will be announced.

For more information, contact DOER Public Information Officer Susan Gedutis at (617) 727-4732, ext. 134.

ENERGY FACT: LIGHTING UPGRADES TO STATE BUILDINGS IN MASS. GENERATE SAVINGS OF 217,756,621 KWH EACH YEAR, ROUGHLY EQUIVALENT TO 400,000 BARRELS OF CRUDE OIL. THIS AVOIDS EMISSION OF APPROXIMATELY 217,756 TONS OF CO₂, A GREENHOUSE GAS.



SPRING 1995

APRIL

13 "Retail Wheeling and Its Impact on Sustainable Energy Development," Cambridge, MA. Armond Cohen, Conservation Law Foundation, will speak as part of a continuing lecture series. Contact the Boston Area Solar Energy Association, (617) 49 SOLAR.

18 *New England Energy Task Force Meeting*, Boston, MA. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

18-19 "Mergers and Acquisitions in the Electric Utility Industry: Exploring Your Options in Today's Electricity Marketplace," New York, NY. Contact AIC Conferences, (800) 409-4AIC.

20-21 *2nd National Electricity Forum*, Providence, RI. Sponsored by the National Association of Regulatory Utility Commissioners (NARUC) and U.S. DOE, this conference will address electric industry restructuring and its implications for state and federal regulators. Contact Jim Fremont, (202) 586-5727.

22 *Earth Day 1995*. Check local listings for activities in your area.

23 *SUN DAY 1995*, Boston, MA. Second annual national celebration of energy-efficient technologies and renewable energy. Contact the SUN DAY Campaign, (301) 270-2258.

28-29 *Massachusetts State Science Fair*, Massachusetts Institute of Technology, Cambridge, MA. Contact the Science Fair Office, (617) 432-2249.

MAY

9-11 *New England Environmental Expo*, Boston, MA. Contact Russ Ryan, (617) 489-4199.

11 "SERP and Other Golden Carrot Programs to Promote the Development of Energy Efficient Appliances," Cambridge, MA. Lawrence Alexander, Consortium for Energy Efficiency, part of BASEA's continuing lecture series. Contact (617) 49 SOLAR.

16 *New England Energy Task Force Meeting*, Boston, MA. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

19 *The 5th Annual Northeast Power Market Conference: The Future of Electric Power in the Northeast*, Boston, MA. Sponsored by the Northeast Power Report and Independent Power Report. Contact (800) 223-6180.

21-27 *7th Annual Tour De Sol and Electric Car Championship* begins in Waterbury, CT and ends in Portland, ME. Contact Northeast Sustainable Energy Association, (413) 774-6051.

JUNE

5-6 "Power Transmission: Access, Pricing and Policy," Washington, DC. Contact Cary Cordova of Infocast, (818) 609-9145.

19-29 "Risk Management for Utilities," World Trade Center, New York, NY. Contact Cary Cordova of Infocast, (818) 609-9145.

20 *New England Energy Task Force Meeting*, Boston, MA. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

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The Commonwealth
of Massachusetts

William F. Weld,
Governor

Argeo Paul Cellucci,
Lt Governor

Gloria Cordes Larson,
Secretary
Economic Affairs

David L. O'Connor,
Commissioner
Energy Resources

GOVERNMENT DOCUMENTS
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Electric Vehicle Demo Finishes Promising First Year

STATE

This spring, the Massachusetts Electric Vehicle (EV) Demonstration Project marked the end of a successful first year. Data and driver satisfaction surveys from the first of this multi-year project show that EVs can perform well in New England, and, with technological refinement, can gain widespread acceptance by the motoring public. The EV Demo Project is a public/private partnership run by the Division of Energy Resources.

Twenty commuters now commute daily in their leased Solectria Force EVs from home to MBTA parking facilities at Braintree, Alewife or Newburyport. While drivers may use the vehicles for personal use, they must include public transit in their commutes. The goal: keep the air cleaner and roadways less congested.

MBTA stations at Alewife and Braintree now feature solar photovoltaic panels installed atop the subway parking garages. The panels were installed by the

EV Demo Project to convert sunlight to pollution-free electricity. The energy replaces power used to charge the EVs parked in the garages during the day.

In ten of the vehicles, on-board computers measure everything from outside air temperature to battery discharge rates. Information is sent daily to a central location, where data on vehicle performance, energy use and power loss is recorded for analysis. DOER also collects data through written surveys and analyzes it for vehicle performance characteristics.

Each driver is required to complete a monthly performance log. Drivers rate ride quality, noise level, driver comfort and perceived dependability and safety. Drivers also rate the performance of specific functions including braking, acceleration, heat, air conditioning and instrumentation. At the conclusion of the first year, drivers rated the cars at an average of 7.6 on a scale of 10.

EV DEMO: Continued on page 6.

NEW COMMISSIONER BULLISH ON MA ENERGY PROSPECTS



In April 1995, the Weld-Cellucci Administration and Economic Affairs Secretary Gloria Larson appointed David O'Connor Commissioner of the Division of Energy Resources. O'Connor joins

DOER from the Executive Office of Administration and Finance, where he served as Special Assistant to the Secretary. In this capacity, he addressed management and operational challenges in tax administration, budget and infrastructure investment.

Mr. O'Connor brings with him twenty years of experience in successfully resolving public and private conflicts over industrial development, power generation, transportation infrastructure, and air and water pollution control. In his previous appointment as Director of the Massachusetts Office of Dispute Resolution, he pioneered governmental use of mediation techniques to settle environmental and economic development disputes.

"David O'Connor's excellent mediation and management skills in the field of energy policy make him an ideal choice for this position," said Secretary Larson. This expertise will be crucial to helping DOER confront an energy industry undergoing revolutionary change. Massachusetts regulators have embarked on the massive deregulation of the electric utility industry. Also, aggressive environmental mandates have stepped up efforts to

NEW COMMISSIONER: Continued on page 7.

FROM COMMISSIONER O'CONNOR:

It is imperative to the Commonwealth's economic health that we reduce electric rates. To accomplish this, Massachusetts has chosen to introduce competition into the heavily regulated electric utility industry. This would allow customers to choose their power supplier as they now choose their long-distance phone carrier. However, there are major risks in this process — including legal gridlock — if the needs of all parties are not considered. At DOER, we feel that successful restructuring of the electric market rests on the collaboration of key industry stakeholders.

Deregulation efforts in other states offer dramatic examples of what happens when negotiation is not used. A year ago in California, for example, the Public Utilities Commission announced its plan for restructuring after holding hearings, but without negotiating on a face to face basis with the stakeholders. The result: a firestorm of public criticism and a polarized debate. In May, 1995, after a year-long delay, the Public Utilities Commission issued a new order and scheduled a new round of hearings. We would be wise to learn from the California experience.

On the other hand, Rhode Island's recent progress is testimony to the advantages of successful negotiation. In a previous restructuring effort, Rhode Island industrial customers, consumer advocates, utilities and independent power producers became involved in a lengthy adjudicatory case before the Public Utilities Commission. This spring, they switched to a collaborative negotiation process and, within two months, reached agreement on a set of general principles to guide restructuring. The agreement lays the groundwork for customer choice and for incentives to clean up old, "dirtier" power plants. The principles address a wide range of interests, including support for renewable energy and for utility recovery of past investments. Finally, the joint agreement envisions a future industry governed by market competition, not regulation.

In comments filed with the Department of Public Utilities in late May, DOER recommended multi-party negotiations to develop a similar set of principles to guide restructuring in Massachusetts, using the Rhode Island agreement as a starting point. Because implicit agreement on many principles already exists among the more than 53 parties in the DPU's investigation, we are optimistic that the remaining differences can be resolved. In our comments, we reaffirmed the importance of customer choice, rate stability for all customers, environmental protection measures, recovery of previously approved investments, services for elderly and low-income customers, regional collaboration and other protections.

The Rhode Island experience should serve as a model for all New England states. However, for any state's plan to work, it must be harmonious with the market structure of neighboring states. New England parties must also negotiate with each other to create a collaborative Regional Transmission Group (RTG) that will ensure consistent, fair access and pricing for all customers.

I look forward to working closely with all industry stakeholders, including utilities, industrial and commercial customers, residential ratepayers, non-utility generators and power marketers, environmental advocates, and energy efficiency and other energy businesses. Electric industry transformation is clearly a very complex task, but, I believe, achievable with an effective negotiation strategy.

DOER LAUNCHES AMBITIOUS MONITORING EFFORT IN TELECOMMUTING INITIATIVE

BUSINESS

DOER recently began the monitoring phase of its Massachusetts Telecommuting Initiative, with the mailing of more than 500 baseline surveys to participating companies. The baseline survey is the first of several surveys that will be used to measure the impact of telecommuting on participating agencies and organizations. To increase the reliability of data collected, surveys are provided not only to participating telecommuters, but also to non-telecommuting co-workers and supervisors.

When the program ends next spring, DOER will produce a written report on telecommuting in Massachusetts. The report will address economic and environmental impacts of telecommuting, and cover issues of employee morale, productivity and workplace diversity. It also will evaluate the impact of telecommuting on traffic reduction and air pollution mitigation. The Donahue Institute at the University of Massachusetts in Boston manages the monitoring component.

The Telecommuting Initiative consists of an "at-home" demonstration, in which employees work in a virtual office environment within their homes from one to three days per week. The project involves over 350 telecommuters from more than 25 of the Commonwealth's largest high-tech and health care companies, and 17 state agencies. Some of the Commonwealth's major employers, including Digital, Nynex, GTE and Massachusetts General Hospital, participate in the program.

The Telecommuting Initiative was launched last year by Governor Weld. The program is a public/private effort administered by DOER and the Executive Office of Transportation and Construction, and is part of the state's comprehensive energy efficiency strategy.

Companies interested in participating in the program should contact William Eddy, Telecommuting Program Manager, at (617) 727-4732, ext. 161.

ECS HELPS KEEP RESIDENTIAL ENERGY CONSERVATION STRONG IN STATE

STATE

55,000 homes and apartments in Massachusetts this year have become more energy efficient, through the Energy Conservation Service (ECS) home energy audit program.

ECS, administered by DOER and delivered by the 57 Massachusetts electric and gas utility companies, provides customized "fuel-blind" energy conservation audits and follow-up services to any residential utility customer. The comprehensive service helps utility customers make their homes more energy efficient and comfortable. Beginning in July, ECS services will expand to help customers use appliances more efficiently and choose more energy efficient appliances, through a new Appliance Efficiency Education Service.

Since some utilities also offer residential demand-side management (DSM) programs, DOER and utilities have worked hard to coordinate these with ECS services. In some cases, a utility's DSM services are "piggybacked" onto the delivery of the ECS audit. In other cases, joint screening of program applicants helps guide customers to the service that best meets their need. This coordination results in better customer service, reduces duplication, and lowers rate payer costs.

The ECS program also provides energy conservation information to owners, managers, and tenants of multifamily buildings of five or more units. Follow-up services help customers install the measures recommended in the audits. This year, the program reached a major milestone. Mass Save, Inc., one of the program providers, audited its 10,000th multifamily building. (See photo, right.)

This year, DOER will undertake a comprehensive evaluation of the ECS program to examine how it can better serve utility customers in today's



The Energy Conservation Service celebrated a major milestone when Woodcrest Court Condominiums in South Weymouth became the 10,000th building audited by Mass-Save, Inc., an ECS program provider. Pictured (l to r): Linda Teagan, Representative (R) Plymouth; John Amoroso, President of Business Services, Massachusetts Electric; Beth Greenblatt, Director of Energy Management, Boston Gas; Lisa Yarid, Legislative Joint Committee on Energy; Steve Gratten, ECS Multifamily Building Manager, Mass-Save, Inc.; Mike Plasski, President, Mass-Save, Inc.; Bruce Ledgerwood, ECS Program Manager, DOER.

rapidly changing utility environment. The evaluation will examine ways to coordinate the various residential conservation services to provide the best and most cost-effective customer services. The evaluation is expected to be underway early in FY96.

For more information, contact Bruce Ledgerwood, at (617) 727-4732, ext. 139.

SUMMER COOLING TIPS TO SAVE MONEY AND ENERGY

This summer, you can beat the heat and spend less on electricity by using some of these simple, practical tips:

PREVENTION: NATURAL COOLING

- Block the sun's heat and keep the house cooler by keeping blinds and curtains drawn and windows and doors closed during the hottest part of the day.
- Proper attic ventilation can release most of the heat in your attic before it moves into your living area.
- Keep lights off. Replace incandescent bulbs that you leave on for three or more hours per day with energy efficient compact fluorescent bulbs. They last up to ten times longer, can save up to \$50 in electricity costs over the life of the bulb, and produce almost no heat.
- During the hottest times of the day, avoid activities that produce heat and humidity. Run the dishwasher and the dryer in the evening.
- Use your microwave oven. It uses up to two thirds less energy than a conventional oven and won't turn your kitchen into a sauna.
- Consider buying energy efficient appliances. They cost less to run and produce less waste heat.

AIR CONDITIONING

- Before turning on your air conditioner, use attic, window, and whole-house fans to flush out hot air. Also, when the temperature outside is less than 80°, you can save money and energy by turning off the air conditioner and turning *on* a fan.
- Keep your air conditioner thermostat at 78°F — or even higher if you use ceiling fans.
- Instead of air conditioning the entire house, create a "cool" room for your family by shutting off a smaller space that can be cooled easily and efficiently. Don't air condition unused rooms.
- Install your room air conditioner away from direct sunlight. Be sure the air intake is not blocked by shrubbery, which makes the unit use more energy.
- Clean air conditioner filters and heat exchangers regularly to maximize efficiency.
- Seal cracks and seams in all central air conditioner ducts. Insulate ducts that run through basements, crawl spaces and attics.
- Consider replacing your old air conditioner with a new, efficient model which may use as much as 50% less energy. Choose a room air conditioner with an EER (energy efficiency ratio) above 9. For central air conditioners, look for a SEER (seasonal energy efficiency ratio) above 12.

How can equitable rates be assured for all cus

Once again, *Energy Report* offers these pages for a discussion of key issues in the debate about the changing electric utility industry. We invited Elliott Jacobson, c
take place without disadvantaging one class of rate payers to benefit another? *Facts and opinions expressed in guest editorials are those of the authors and not ne*

Electric utility restructuring: the small consumer perspective

by Elliott Jacobson

If we are not careful, letting major Massachusetts electricity customers bypass their local utility will raise rates for most residential and small business customers. It could also result in Massachusetts abandoning its nationally-recognized energy efficiency programs.

There is no longer much support for a scheme that would permit the industrials to be the first to be able to take advantage of retail competition. Nor is there support for letting one group of customers get out from under the high costs of existing power plants, leaving utilities and the remaining customers to squabble over who must bear these costs. The Federal Energy Regulatory Commission has proposed rules that would prevent this kind of cost-shifting from one class to another. But under FERC's proposed rules, rate payers would have to pay utilities 100 cents on the dollar for these high-cost plants. Under this proposal, utilities would bear no risks in the transition to a more competitive market.

There's a big difference between the theoretical right of small consumers to buy their power in a competitive market, and the practical barriers that they will face. For one thing, it will cost as much as \$500 per house to install the metering needed to let customers choose their own suppliers. Such re-metering would increase system costs by 12%, enough to fund 24 new peaking plants.

Even if we solve the metering problem and the stranded cost problem, under retail competition big customers will still be able to strike sweetheart deals, leaving residential and small commercial customers to take what rates the power suppliers can exact from them. For example, when we deregulated the gas industry, the cost of gas at the wellhead went down 25%, and industrial customers saw a 33% drop in prices. But gas prices haven't gone down for residential customers; in fact, they've gone up.

Retail wheeling will also undermine utility conservation efforts. Demand-side management (DSM) has helped Massachusetts

consumers save millions of kilowatt-hours of power and millions of dollars in power costs. Under market pressures, utilities will abandon these programs, and planning for energy efficiency will wither.

Low-income customers will feel the brunt of these policies hardest. Our poorest families use less electricity than the average residential household, but electricity costs take three times the bite out of the low-income family budget.

**IF WE ARE NOT CAREFUL,
LETTING MAJOR
ELECTRICITY CUSTOMERS
BYPASS THEIR LOCAL
UTILITY WILL RAISE
RATES FOR MOST
RESIDENTIAL AND SMALL
BUSINESS CUSTOMERS.**

— JACOBSON

To achieve universal service, any restructuring package must include an effective package of rates and services. Such a package would include accelerated and enhanced conservation programs for low-income customers, protections against abusive billing and collection methods, regulations preventing utility "redlining," and rate affordability programs that enable low-income customers to afford utility service.

Utility conservation programs for low-income customers are best delivered in coordination with the U.S. Department of Energy's Weatherization Assistance Program, which has been proven cost-effective. Such services must be provided in conjunction with a well-designed rate affordability plan, based on the amount a customer can realistically pay, to enable a responsible low-income customer to maintain service, and help utilities avoid unnecessary bill collection costs.

It is possible to restructure the electricity industry to get the best of competition without all the drawbacks. For example, Senator Montigny has introduced a bill that would allow municipalities to force utilities to go through a competitive bid process to renew their franchises. A utility that has not been providing quality service at the least cost would lose its franchise. We could also divest generation assets from the rest of the system, and encourage true wholesale competition. Finally, there are ways to finance continued support for the public obligations of the electricity system, such as DSM, low-income rates, and the like, under restructuring. All providers can pay an access fee for the right to sell their electricity over the wires, which will remain a regulated monopoly under everyone's vision of the future.

However we move forward, we need to pay attention to the specifics, and not trust blindly in some theoretical market to achieve the goals of lower electricity bills for Massachusetts consumers.

Elliott Jacobson is Director of Resource Affordability and Quality Programs at Action, Inc., Chairman of the New England Community Action Association Energy Committee, and Member of the Executive Committee of the DOE Energy Advisory Board for Efficiency and Renewables.

Customers in a restructured electric market?

, Inc., and Robert Ruddock, of the Associated Industries of Massachusetts, to discuss one of the most difficult issues of restructuring: how can these changes be assured for those of DOER.

How can equitable rates be assured for all customers in a competitive market? by Robert Ruddock

Concern about inequitable rates among electricity users in a deregulated electricity system is an important one, no less for the business community than for residential electricity users. Two facts must not be lost in considering the question.

The purpose of restructuring the electric industry in Massachusetts, New England, or nationally is to achieve a competitive electric marketplace for electricity. This purpose is not served if restructuring, as implemented, arbitrarily benefits one type of user over or against another.

A competitive market structure, whatever its final form, should reward risk taking, efficiency, innovation and good customer service, deliver real world cost signals to suppliers and customers, increase customer choice, and tend to moderate or reduce costs. There is justification based on analogous situations, where industries regulated as monopolies have been restructured as competitive systems, to believe that electricity deregulation would work the way proponents assert. If so, positive benefits accrue to all users. These benefits include choice of services, control of costs and reliability of service. The first fact, therefore, is that restructuring is a way to benefit all groups of users.

The second fact is that no individual firm and no business organization actively engaged in the policy discussion of restructuring is advocating inequality or cost shifting among user groups as a goal for changing the system. The diversity within the business community itself makes such an idea clearly unacceptable. In any event, cost shifting is, in the final analysis, economically counter-productive and politically impossible.

Notwithstanding these facts, the notion persists that there will be user groups who are disadvantaged by deregulation — electricity users who for arbitrary reasons will pay more.

If restructuring is to occur, this must be addressed in the short term. A phased transition to competitive markets, with appropriate controls on costs for those user segments still within the monopolistic system, could ensure that cost shifts do not take place and that user groups coming later to the competitive marketplace do not subsidize lower costs for earlier-in users. After the transition, if analogous situations are indicative, market forces will themselves appropriately reconcile costs within and among user groups.

THE GROWING CONSENSUS IS THAT THE BENEFITS OF COMPETITION OUTWEIGH THE RISKS, AND THAT THE TRANSITION PERIOD FOR CONSUMERS AND ELECTRIC COMPANIES IS OF PARAMOUNT IMPORTANCE.
— RUDDOCK

Will individual electricity users and groups of users have different costs for electricity in the end? The answer is yes — but not because the system is stacked for or against a particular individual user or group of users. Differences will exist because choices by the users, individually or collectively, will determine final costs. Will residential or business consumers be left with arbitrary costs, inequitable costs, or subsidizing costs of others? The answer is no, if competitive markets work and market forces are allowed to unleash efficiencies for each and every consumer.

While equitable rates for all customers in a restructured electricity market are important,

no business, no industry, and no residential customer should lose sight of the fact that a restructured market, by its very nature, demands taking responsibility for making choices. It also removes the government as a buffer between the user and marketplace consequences of these choices. As Associated Industries of Massachusetts was asked recently, is the business community prepared for an electricity marketplace where costs can go up as well as down? The same can be asked of all electricity consumers, including residential users. The growing consensus is that the benefits of competition outweigh the risks, and that the transition period for consumers and electric companies is of paramount importance.

Robert Ruddock is an attorney and Senior Vice President for Energy and Environment Programs at Associated Industries of Massachusetts, a 3400-member state-wide organization of employers.

PUBLIC BUILDINGS INITIATIVE: ENERGY ENGINEERING PROGRAM

LOCAL

Massachusetts taxpayers will soon reap the benefits of energy savings procured through DOER's Energy Engineering Program (EEP). To date, EEP has helped eight Massachusetts municipalities develop energy and water conservation projects in their facilities.

EEP helps cities, towns, counties and local housing authorities develop energy and water upgrades from start to finish. The program pairs private energy engineers with public building management officials to identify specific improvements, solicit bids, and provide technical guidance during implementation. The service is especially important in helping building owners correctly describe and advertise projects, evaluate bids and monitor the performance of the improvements.

EEP also helps municipalities find much-needed financing. More than two hundred private firms have expressed interest in investing in municipal energy and water conservation projects in Massachusetts. EEP provides the expertise municipalities need to take advantage of this "third party"

financing. Since an investor reaps returns through the savings generated by the project, both investor and municipality win. EEP also helps municipalities finance projects through utility rebate programs.

EEP provides the critical support necessary for those municipalities which lack the financing or technical expertise to implement energy and water cost-saving projects on their own. With the assistance of EEP engineers and model procurement documents available from DOER, municipal staff do not need to "reinvent the wheel" to take advantage of existing market opportunities to cut energy and water costs.

DOER invites the participation of municipalities that meet specific criteria. To qualify, a facility's energy and water consumption costs must be above average for its building type and exceed \$250,000 per year. Buildings must require capital investments in excess of \$200,000 and have a stable consumption record.

For more information on EEP, contact Teresa Civic, Public Buildings Program Manager, at (617) 727-4732, ext. 137.

EV DEMO: From page 1

The project has revealed important information on EVs. First year performance results indicate that work is needed to improve the life, dependability, cold weather performance and maintenance of the batteries. But the industry is still young and small — much rests on the technological refinements and price cuts that come with larger scale production.

To date, the program's EVs have cost the drivers an average of 3 cents per mile to fuel, about the same as a conventional gasoline-powered compact car. The data shows that electric vehicles get a comparative 100 miles-per-gallon, but current battery technology only provides storage capacity comparable to less than a one-gallon gas tank.

The biggest and most well-known hurdle to tackle is battery life and dependability. In this first year, the demonstration used two types of batteries — lead acid and nickel cadmium (NiCad) — and found mixed results. The vehicles' range on full charge using lead acid batteries

spanned 26-42 miles, on average. Vehicles using NiCad batteries ran, on average, for 35-47 miles, somewhat less than the 30-60 miles projected.

Another issue is the maintenance requirements of nickel cadmium batteries. Water levels in these batteries must be constantly monitored, but due to the location and complexity of these batteries, this procedure requires a service technician. This regular maintenance requirement may be troublesome for time-constrained commuters.

This coming year, DOER will purchase additional EVs, and participants will be allowed to carpool from home directly to work using state-of-the-art, longer range batteries. The program will continue to explore why earlier batteries did not perform as expected and, with the help of vehicle manufacturer Solecia and program partner Boston Edison, will implement technical solutions. New vehicles purchased will be required to incorporate these solutions, and existing vehicles will be retrofitted. By acting on the lessons learned in this first year, DOER hopes that the Electric Vehicle Demonstration Project will help steer electric vehicles into near-term acceptance.

The Massachusetts Electric Vehicle Demonstration Program is funded by the Federal Highway Administration through the Massachusetts Highway Department, the Division of Energy Resources, Boston Edison, Commonwealth Electric and New England Electric Service Company. Additional members of the steering committee include: the Metropolitan Area Planning Council, the City of Boston Traffic and Parking Department, the Northeast States for Coordinated Air Use Management, the MA Department of Environmental Protection, the Department of Procurement and General Services and the MBTA.

For more information on the EV Demonstration Program, contact DOER's Director of Programs, Jack Bevelequa, at (617) 727-4732, ext. 126.



Program participant Amy Weinstock, husband Michael Coln and their Solecia Force electric car. "It's a great commuting vehicle," says Weinstock.

SUMMER WORKSHOPS/ INTERNSHIPS FOR ENVIRONMENTAL EDUCATORS

This summer, teachers of grades PreK-12 can update their environmental education methods and curricula in three week-long teacher workshops offered by The Solar Now Project at Endicott College in Beverly, MA. Solar Now is also offering summer internships at a variety of sites across the state to college students studying environmental education, engineering and management. The Solar Now Project recently won a \$250,000 grant from the U.S. Department of Energy to fund these projects.

The three teacher workshops will offer multi-level, interdisciplinary instruction on renewable energy, with an emphasis on solar energy. All workshops will include a site visit to the solar array adjacent to Beverly High School in Beverly, MA. The site is one of the largest operating photovoltaic arrays in the nation. At the site, student interns will demonstrate various solar applications, including photovoltaics for the generation of electricity and for solar water heating. Educators can earn professional development points for completing the workshops.

This fall, Solar Now will host a two-day Photovoltaics Conference for teachers and students of all ages. The event will feature the latest information on technology, education and the economics of renewable energy from sources around the world.

Solar Now was founded in 1994 by environmental educator Carmel Valianti-Smith to educate and promote renewable energy. The Solar Now Project is a collaborative effort of the Beverly Public Schools, Beverly Hospital, a student organization known as Help Save Our Environment and Endicott College.

For more information, call The Solar Now Project at (508) 927-0585, ext. 2140

DOER WELCOMES NEW ENERGY EDUCATION COORDINATOR

STATE

In May, Dick Leonard joined DOER as Energy Education Coordinator. Leonard will lead the agency's initiatives to increase and enhance energy education for students and professionals in energy-related fields.

Leonard brings more than fifteen years of energy education experience to the position. Leonard was responsible for establishing an effective energy education program for Central Hudson Gas and Electric in Poughkeepsie, NY. During his tenure there, he was appointed as the business representative to the New York Education Commissioner's Advisory Council on Equity and Excellence in Mathematics and Science Education, and served as chairperson of the New York Power Pool's Education Committee. On the local level, he supported the formation of the Dutchess County Children's Museum and became its Board President. Since 1988, Leonard has run his own energy education consulting business out of Pittsfield, MA, supporting the energy education needs of utilities, colleges and state energy offices. Mr. Leonard began his career as a science teacher for grades 4-10.

Over the next year, Leonard will help DOER identify energy education needs in schools and energy-related professions, and will work with public and private sector interests to meet those needs. Leonard will also oversee the creation of a computer-based energy education referral and information center, and a grant program to support innovative energy education projects for students.

NEW COMMISSIONER: *From page 1*

advance technologies for clean, efficient transportation and power generation modes.

"We must do all we can to identify opportunities to reduce costs," said O'Connor. "We should be increasing the role of competition and opening doors for choice among energy users in all sectors." O'Connor cites the introduction of market competition into the electric utility industry as a key instrument to facilitate customer choice and reduce energy prices over time.

"We also want to identify and foster the growth of promising technologies to help ensure a clean future for Massachusetts," O'Connor said. "For example, our alternative fuel vehicle demonstrations provide firsthand knowledge of the performance of emerging vehicle designs. We will support new transportation and other energy industries in many ways — through funding, new vehicle safety and performance standards, streamlined regulations and by alerting potential customers to the benefits of new technologies."

O'Connor points to a double agenda on this front. While at the DOER helm, he hopes to diversify the state's vehicle fuels and create jobs through the expansion of the energy industry. O'Connor added, "Some

of the brightest job prospects for manufacturing and assembly are in compressed natural gas and electric-powered vehicles, solar technologies, waste-to-energy plants and fuel cells."

O'Connor believes that the state's high tech work force and intellectual capital make this growth not only possible, but imminent. He hopes to encourage venture capitalists to invest in clean technology production facilities in Massachusetts. Putting these facilities in close proximity to future markets is a strategy he believes will be successful if government and industry work together.

O'Connor also looks forward to continuing DOER's programs in the commercialization of conservation services and renewable fuels. He sees these as excellent near-term strategies to help achieve the long-term goals of cheaper electric rates and fuel supply diversity and security. O'Connor wants to work closely with other industry members toward this end.

SUMMER 1995**JULY**

5-8 *Into the 20th Century: Harmonizing Energy Policy, Environment and Sustainable Energy Growth*, Washington, DC. Sponsored by the International Association for Energy Economics. Contact Conference Headquarters at (216) 464-5365.

10-14 *Regional Energy Planning Project Modeling Conference*, Newport, RI. Contact Stephen Leahy, New England Governor's Conference, (617) 423-6900.

18 *New England Energy Task Force Meeting*, Boston, MA. At U.S. Department of Energy (DOE) Region I Office, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

AUGUST

1-4 *1995 Summer Study on Energy Efficiency in Industry*, Grand Island, NY. Sponsored by The American Council for an Energy Efficient Economy. Contact Katherine Gallagher, (510) 549-9914.

15 *New England Energy Task Force Meeting*, Boston, MA. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

SEPTEMBER

19 *New England Energy Task Force Meeting*, Boston, MA. At DOE, One Congress Street, 11th Floor, 1:30 p.m. Contact Duane Day, (617) 565-9705.

28-29 *Reclaim '95*, conference on landfill mining/reclamation, Albany, NY. Co-sponsored by Resource Recovery and the Solid Waste Association of North America. Contact Richard Will, (800) 627-8913.

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